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IN THE
**SUPREME COURT OF THE
UNITED STATES**

October Term, 1983

FRANKLIN COMPUTER CORPORATION,

Petitioner,

v.

APPLE COMPUTER, INC.,

Respondent.

**PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF
APPEALS FOR THE THIRD CIRCUIT**

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QUESTIONS PRESENTED

1. Does Section 102(b) of the Copyright Act—which denies copyright protection to an original work that constitutes an “idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work”—preclude copyrightability for an *operating system* of a computer which manages the computer’s internal functions and is its method of operation?

2. Under the doctrine of *Baker v. Selden*, 101 U.S. 99 (1879), may one use copyright to obtain a monopoly over a computer operating system, which system is a necessary and utilitarian part of the computer, and essential for the computer to function?

3. In copyright cases where preliminary injunctive relief is sought, may the trial court eliminate all consideration of the element of irreparable harm simply because the plaintiff has shown a *prima facie* case of copyright infringement?

Pursuant to Rule 28.1, petitioner states that it is a wholly-owned subsidiary of Franklin Technologies, Inc.

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**PETITION FOR A WRIT OF CERTIORARI
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Petitioner, Franklin Computer Corporation, respectfully prays that a writ of certiorari be issued to review the judgment of the United States Court of Appeals for the Third Circuit entered on August 30, 1983.

OPINIONS BELOW

The opinion of the court of appeals (A 1) of which review is sought is reported at 714 F.2d 1240 (3d Cir. 1983). The opinion of the district court (A 32) is reported at 545 F. Supp. 812 (E.D. Pa. 1982).

JURISDICTION

The judgment of the court of appeals (A 65) was entered on August 30, 1983. A timely petition for rehearing was denied on September 23, 1983 (A 66), and this petition is being filed within 90 days of that date. On September 30, 1983, the court of appeals granted a stay of the issuance of the certified judgment in lieu of a formal mandate until October 30, 1983. (A 67)

The Court has jurisdiction to review the judgment of the court of appeals under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

This case involves the following constitutional provision and statutes, each of which is set forth in full at A 68-69:

U.S. Const. art. I, § 8, cl. 8

Copyright Act, 17 U.S.C.A. § 101, Pub. L. No. 96-517, § 10, 94 Stat. 3028 (1980) (Software Copyright Act of 1980)

Copyright Act, 17 U.S.C. § 102(b) (Supp. III 1979)

STATEMENT OF THE CASE

This petition seeks review of a widely-reported¹ decision of the United States Court of Appeals for the Third Circuit which reversed the denial of a preliminary injunction motion and remanded the case to the district court. 714 F.2d at 1255, A 31. In this case of first impression the circuit court determined as a matter of law that computer *operating systems* are eligible for copyright protection.

The issues in this case are seemingly complex, but come sharply into focus if one delineates at the outset the undisputed distinction between computer *operating systems* and computer *application programs*. Computer operating systems consist of routines that electronically activate a computer and manage the various internal housekeeping functions that a computer must perform in order to run any application program, CR 45 at 7-8. Operating systems are, in short, a computer's technological life support system. Application programs, on the other hand, (commonly referred to as "computer programs" or "software"), are programs inserted into a computer which has been made to function by virtue of its operating systems. Application programs display and make available for computer users the thousands of available programs

1. The public focus on this case and its significance to the computer industry, and high technology in general, is extraordinary. See, e.g., N.Y. Times, Sept. 2, 1983 at A1, col. 1; Washington Post, Sept. 3, 1983 at E9, col. 1; Wall Street Journal, Sept. 2, 1983 § 1 at 2, col. 3; Associated Press, Sept. 1, 1983, A.M. cycle, Domestic News Section; Reuters Ltd., Sept. 2, 1983, A.M. cycle, Domestic News Section; Reuters Ltd., Sept. 2, 1983, A.M. cycle, Business News Section; National Law Journal, Sept. 19, 1983 at 50, col. 1; N.Y. Times, Sept. 25, 1983 § 3, at 2, col. 3; Legal Times, Sept. 26, 1983 at 13, col. 1; Information Systems News, Oct. 3, 1983, at 1, col. 1; N.Y. Times, Oct. 23, 1983 § 3, at 8, col. 1.

covering such topics as accounting, inventory control, spread sheets, word processing, information storage, various tests, and a myriad of games from chess to space battles. CR 45 at 63-65. Application programs are *not* involved in this case, and were not the subject of the copyrights challenged here. Rather, the focus of this litigation and the decision below is the *operating systems* that enable the computer to function and which provide access to the numerous application programs that are available for particular computers. Without the operating systems, the various application programs have no access to the computer and will not function on it.

Apple is a successful California personal computer corporation, recognized as an industry leader. 714 F.2d at 1242, A 4. Since 1976, Apple has sold more than 400,000 of its Apple II computers. A byproduct of Apple's early success is that there now exists a vast body of software, *i.e.*, thousands of computer application programs, designed by independent third parties, which are compatible with the Apple II operating systems. 714 F.2d at 1242, A 4. Access to these thousands of computer application programs for any consumer is dependent upon having a computer that emulates Apple's operating systems. CR 47 at 340-41; 545 F. Supp. at 814, A 37. Until recently, a prospective user of the thousands of "Apple-compatible" application programs had no choice but to buy the Apple computer, since only Apple's operating systems could receive and run most of such application programs.

Franklin, a Pennsylvania corporation, was formed in 1981 to manufacture and market personal computers. CR 12 at ¶¶ 313-14. The founders of Franklin recognized the need in the market for a computer with hardware and operating systems designed so that it would be compatible with the broad range of application programs that so far could be run only on the Apple II computer operating

systems. Franklin's objective was not only to respond to that market demand for a compatible computer, but also to supply one that had enhanced capabilities. CR 47 at 340-41.

In February, 1982, Franklin entered the market with its Ace 100 personal computer, which was capable of running all of the application programs that originally had been written to be compatible with the Apple II operating systems, and which competed in price and features with the Apple II computer. CR 12 at ¶ 322.

In developing its Ace 100 computer, Franklin was advised by legal counsel that it could utilize Apple's operating systems because those systems contained no copyrightable expression and were an integral part of the computer technology necessary to make the computer function. CR 47 at 342-43, 357-58. Franklin also studied whether it would be possible to redesign the works in suit and still produce a computer that would run Apple-compatible application programs. CR 46 at 247-60, 269-72; CR 47 at 351, 364-67. Franklin concluded that redesign was not possible without sacrificing the objective of Apple-compatibility. *Id.*; CR 46 at 258-60. Thus, the only way to enter the market with a computer that could receive the thousands of application programs available to purchasers of Apple computers was to develop a computer that used the same operating systems and technological processes used in the Apple II. CR 46 at 247-60, 277; CR 47 at 348-55. Apple had sought to copyright, but not patent, such operating systems.²

Apple brought suit against Franklin on May 12, 1982, alleging copyright infringement, patent infringement, un-

2. For purposes of the preliminary injunction motion, Apple limited its claims to those of copyright infringement.

fair competition, and misappropriation in connection with Franklin's manufacture and marketing of the Ace 100. Apple asserted that the district court had jurisdiction under 28 U.S.C. § 1400(b). Franklin answered, raising affirmative defenses; seeking declaratory judgments that each of the copyrights claimed by Apple is invalid, void, unenforceable, and not infringed; and counterclaiming that Apple has attempted to monopolize its technology, and used the works in suit in a manner constituting anti-competitive conduct in violation of the antitrust laws. CR 12 at 64-76.

In June, 1982, Apple moved for a preliminary injunction to restrain Franklin from using, copying, selling or infringing Apple's claimed copyrights in the works in suit. A hearing on Apple's motion, limited to the copyright issues, was held from June 16, 1982 through June 18, 1982.

During the three-day hearing, Franklin introduced expert testimony indicating that Apple's operating systems are "processes," "systems" or "methods of operation," CR 47, Ex. D-13 at 16; and that they are purely functional and utilitarian, *id.* Further, the evidence introduced by Franklin indicated that those operating systems contain no copyrightable expression, CR 47 at 320, 396; and that the operating systems merge idea with expression to such an extent that they are inseparable and indistinguishable, CR 46 at 276; CR 45 at 53-54, 56, 96; CR 46 at 185-86, 210-12; CR 47. Apple's contention was that operating systems are copyrightable as a matter of law.

On August 2, 1982, the district court entered an order denying Apple's preliminary injunction motion on the grounds of failure to show probability of success and failure to show irreparable harm. On August 12, 1982, Apple moved for reconsideration, and on September 15,

1982, the district court entered an order denying Apple's motion.

Apple appealed from the order of the district court on August 31, 1982 and oral argument on that appeal was held on March 17, 1982. The court of appeals issued its decision nearly six months later on August 30, 1983, deciding as a matter of law that operating systems are eligible for copyright protection.³

The court of appeals, in a lengthy and far-reaching opinion by Judge Dolores K. Sloviter, addressed critical issues of statutory and constitutional dimension,⁴ reversed the district court, and remanded the case for reconsideration.

3. Although there are obviously factual disputes in the record, the circuit court reversed on the basis of law, stating, "Because we conclude that the district court proceeded under an erroneous view of the applicable law, we reverse the denial of the preliminary injunction and remand." 714 F.2d at 1242, A 3-4.

4. The opinion of the court of appeals contains much discussion of the effect of its earlier decision in *Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870 (3d Cir. 1982), which was issued within days of the district court's denial of Apple's motion for a preliminary injunction in this case. *Williams* involved the question of whether a computer program expressed in object code and embedded in a ROM loses copyrightability because of those traits. Those "fixation" issues are not, however, involved here. Franklin did not argue them before the court of appeals, and does not raise them here. The portions of the court of appeals' decision that are pertinent to this writ appear at 714 F.2d at 1249-54, A 19-28.

REASONS FOR GRANTING THE WRIT

INTRODUCTION

Even among the many important cases bidding for this Court's attention, this case stands out as an extraordinary one for the following reasons:

1. This case indisputably involves the most important legal issues in the field of computer technology since the very advent of the computer.⁵ Moreover, this is a case of first impression in which an authoritative decision by this Court will substantially promote judicial economy, forestalling the torrent of burdensome litigation now brewing in every circuit in the nation.

2. This case has constitutional dimension involving the scope of Article I, § 8, Clause 8 of the Constitution as applied to modern computer technology.

3. This case poses the question of whether *Baker v. Selden*, 101 U.S. 99 (1879), should have continued vitality or, whether (as the court below believed) *Baker* is obsolete in the computer age, notwithstanding its constitutional underpinnings and its codification in the Copyright Act.

4. This case raises the important statutory issue of whether the 1980 Amendments to the Copyright Act, adding a definition of "computer program" to Section 101, override the basic concepts of Section 102(b) of the Copyright Act, which mandate that "systems," "processes," "methods of operation" or "ideas" may not be copyrighted.⁶ That question is of critical importance to

5. See footnote 1, *supra*.

6. This point overlaps conceptually with point three above.

the computer industry and other areas of high technology.

5. This case also highlights the continuing confusion in the circuits on the question of whether irreparable harm is to remain a relevant element in deciding preliminary injunctive relief in copyright cases, or whether that element is to be presumed upon a *prima facie* showing of copyright infringement.

Each of these factors alone would seem to warrant the grant of certiorari. Surely, their confluence in this case presents an extraordinary and urgent reason for this Court's review. We recognize that this case arises from an interlocutory appeal upon the denial of a preliminary injunction. However, the legal issues decided by the court of appeals are not only the law of the case, but are the law of the circuit according to the internal operating procedures of the Third Circuit. *See Third Circuit Internal Operating Procedures* 8.13. Hence, insofar as legal issues were decided by the court of appeals, they have a finality that makes them appropriate for review, even apart from the compelling factors set forth above.

Each of the reasons for granting the writ will be briefly amplified.

I. THIS CASE IS OF CRITICAL IMPORTANCE AND HAS FAR-REACHING IMPLICATIONS.

The courts below, the parties themselves, and leading commentators all agree that this case is of extraordinary importance to the computer industry, an industry critical to the nation's technological pre-eminence, which generates billions of dollars each year.⁷

Indeed, there can be no dispute that the future course of the computer industry, which is at the cutting edge of the nation's development of high technology, will be substantially affected by whether the court of appeals' decision is correct or incorrect. If computer operating systems are determined to be eligible for copyright protection, these consequences follow:

(a) First, computer manufacturers will (as Apple has done) seek copyright rather than patent protection for their operating systems. Copyrights are very easily and quickly obtained and provide a 75-year monopoly. Obtaining a patent, however, takes much longer and the applicant must set forth the specific claims thereof and meet a rigorous test of novelty and non-obviousness, then earning a monopoly limited to only 17 years. In the future therefore, essential and lucrative elements of high technology will be converted into computer electronic circuitry, regardless of the technological and economic desirability of that approach, in order to achieve a longer and broader monopoly through the easier route of copyright.

(b) Second, if early market entrants can capture technologies by copyrighting elements of high technol-

7. See footnote 1 regarding representative public comments. In addition, virtually every journal in the computer field has discussed this case and a number of legal seminars have considered its implications. So too, the court below specifically noted the importance of this case to the computer industry (714 F.2d at 1242, A 3).

ogy, such as operating systems, competition in computer manufacturing will be discouraged. Where patents are concerned, any manufacturer may manufacture similar machinery, provided any specific patentable claims are avoided; but in copyright, similarity becomes the very basis for a claim of copyright infringement. Moreover, potential computer manufacturers may refrain from entering the market at all because if they are foreclosed from using unpatented operating systems, they will also be denied access to the application programs dependent on those systems. Hence, the technological advances and more economical machinery that come with competition will be substantially deterred if operating systems fall within the ambit of copyright protection.

(c) Third, the copyrighting of operating systems will foster the "balkanization" of software application programs. This is because each manufacturer, by being able to monopolize operating systems, will also be able to control access to the market for application programs that are compatible with the computer's copyrighted operating systems. Interfacing of machines and widespread compatibility—both of which are technological and economic desiderata—would be set back.

Those consequences must be contrasted with the benefits that may be expected if it is determined that operating systems are not eligible for copyright protection. In that event, the number of competing computer manufacturers will increase substantially. This is because it is widely recognized that there is insufficient novelty and non-obviousness in most computers to justify patent protection. Lacking patents and in the absence of copyright protection for operating systems, more manufacturers will be able to produce computers that provide access to the thousands of available applications programs. An increase in the number of computer manufacturers inev-

itably advances competition, encourages technological advances and leads to lower prices for consumers. In addition, the absence of copyright protection for operating systems will promote their standardization, thereby offering greater access to more application programs for consumers at many income levels.

Ultimately, the issue of copyrightability or non-copyrightability of computer operating systems and the corollary constitutional and statutory questions must be decided by this Court. Of course, this Court could do so later. However, the legal issues are ripe for decision now, and the issues are urgent because they are and will be arising again and again in many district court cases, where the courts' rulings will either allow particular manufacturers to compete in this vital field or prevent them from doing so, with serious consequences for the industry and consumers.

These compelling issues of tremendous public interest have not yet been considered and decided by this Court. Unless decided by this Court, the application of the law to high technology will remain in question, continuing the present confusion⁸ and uncertainty and spawning continued litigation.

II. THE COURT OF APPEALS' DECISION CONFLICTS WITH AND UNDERMINES PRINCIPLES SET FORTH IN *BAKER v. SELDEN*.

The continued vitality of the seminal decision in *Baker v. Selden*, 101 U.S. 99 (1879), is at stake here. According to the court of appeals, *Baker* has little, if any, relevance to modern computer technology. If that is to be so, it requires enunciation by this Court.

8. See, e.g., N.Y. Times, Oct. 23, 1983, footnote 1, *supra*.

Baker held: (1) that use of a *system* does not infringe a copyright on the description of the system, (2) that copyright does not extend to purely utilitarian works, and (3) that the copyright laws may not be used to obtain and hold a monopoly over an *idea*.⁹ The *Baker* principles are not common law creations, but constitutional doctrines; they form the doctrinal underpinning of Section 102(b) of the Copyright Act.

Baker's differentiation between the province of copyright and the province of patent is grounded in the Constitution's division of their separate subject matter into "Writings and Discoveries," U.S. Const. art. I, § 8, cl. 8, and reflects the relative social costs of protecting each. When "Writings" are protected through the grant of copyright, only the particular expression used is protected; the idea itself remains free and open for public use. Because use of or access to the *idea* remains unrestricted, the prerequisites for copyright protection of expression are minimal. In contrast, "Discoveries," the subject of patent, are ideas themselves, or in more modern terms, technology. When a patent is granted, access to and exploitation of the idea or technology is severely restricted. In order to strike the delicate balance between

9. *Baker* involved the claimed copyright in a series of books explaining a particular system of bookkeeping. The books contained forms consisting of ruled lines and headings, which illustrated the system and its use. The plaintiff contended that his copyrights gave him *the exclusive right to use the system* explained in his books and embodied in his forms. This Court rejected that argument, pointing out that "there is a clear distinction between the book, as such, and the art which it is intended to illustrate," 101 U.S. at 102, and that "necessary incidents" of the use of a system are open and free to the use of the public, *id.* at 103. The Court ruled that copyright could not be used to monopolize an idea, system or art; such a monopoly can be secured only when a work has satisfied the far more rigorous standards of the patent laws. *Id.* at 102.

the preservation of the free use of ideas and the encouragement of invention, those seeking a patent monopoly must meet far more rigorous requirements, both substantive and procedural, than those seeking copyright protection.

The district court plainly applied these principles to Apple's operating systems when it doubted their copyrightability because they "are an essential element of the machine, if not an essential part of the machine that makes it work," 545 F. Supp. at 821, A 52, and "are manifestations and implementations of the 'useful arts,' as the term is understood in patent law, directed to producing a beneficial result," *id.* at 824, A 58.

The court of appeals disagreed. The court of appeals acknowledged that a "literal construction" of *Baker* supported Franklin's position that purely utilitarian works cannot be copyrighted. However, the court disagreed with *Baker*, stating, "We cannot accept the expansive reading [of *Baker*] given . . . by some courts." 714 F.2d at 1251, A 23.

However, it is not an "expansive reading" that the court of appeals refused to apply—but the clear language of this Court in *Baker* itself prohibiting copyright protection for methods that are "necessary incidents to the art." 101 U.S. at 103.

Recognizing perhaps that it is not the province of courts of appeals to reverse *Baker*, the decision below states that Franklin's "interpretation"¹⁰ of *Baker* has been rejected by the later case of *Mazer v. Stein*, 347 U.S. 201, 218 (1954). 714 F.2d at 1252, A 23. The court of appeals

10. The court of appeals did not explain how Franklin's "literal construction" of *Baker*, referred to earlier, was converted to an "interpretation" or an "expansive reading." See 714 F.2d at 1251-52, A 23.

is clearly wrong. *Mazer* involved statuette lamp bases and dealt with the question of whether a work *that had been determined to be copyrightable*, loses its eligibility for copyright if it is incorporated in a utilitarian object. The court in *Mazer* said it did not. That case did not touch upon the issue central to *Baker* of whether a utilitarian work that is a "necessary incident" to the useful art itself can be copyrighted in the first instance. *Mazer* does *not* adopt the limited reading of *Baker* suggested by the court of appeals. On the contrary, by stating that "a copyright gives no exclusive right to the art disclosed," 347 U.S. at 217, *Mazer* affirms the same literal reading of *Baker* that Franklin urged and the court of appeals refused to follow.¹¹

11. The court of appeals' decision may also be viewed as diverging from the law in other circuits that have had occasion to apply *Baker* to works that, like Apple's operating systems, are functionally interdependent with a machine. Thus, the Seventh Circuit, citing *Baker*, refused to extend copyright protection to a work so interdependent with a machine that it was, in essence, part of the machine. *Taylor Instrument Companies v. Fawley-Brost Co.*, 139 F.2d 98, 100 (7th Cir. 1943), *cert. denied*, 321 U.S. 785 (1944). So too, the District of Columbia Circuit, in a case involving recording charts, applied the rationale of *Baker* and *Taylor* and found the works uncopyrightable, saying:

"Both law and policy forbid monopolizing a machine except within the comparatively narrow limits of the patent system. . . . Since the machines which cooperate with the charts in suit are useless without them, to copyright the charts would in effect continue appellant's monopoly of its machines beyond the time authorized by the patent law." *Brown Instrument Co. v. Warner*, 161 F.2d 910, 911 (D.C. Cir.), *cert. denied*, 332 U.S. 801 (1947).

Even if the court of appeals were correct in characterizing the *Taylor* and *Brown* decisions as "expansive" readings of *Baker*, 714 F.2d at 1251, A 23, for some circuits to give an "expansive" reading to *Baker* while others take a "non-expansive" view, in effect, constitutes conflict among circuits.

The court of appeals' failure to follow *Baker* causes considerable confusion as to the relevance of the case for works such as computer operating systems that are the product of modern technology. What Apple seeks is to *capture a technology* by copyrighting its operating system programs, obtaining through copyright an unprecedented monopoly for its machine, of longer duration than is permitted by the patent laws and without meeting the rigorous standards and procedures of the patent system.¹² The response Apple's quest receives in the federal courts is of obvious importance to the computer industry and to other industries based on new technology. If the court of appeals is correct and *Baker* no longer has vitality, then manufacturers will readily resort to copyright to capture monopolies over technology. That is hardly of small consequence. It is imperative that this Court act now to clarify the constitutionally-based distinction between "Writings" and "Discoveries" (the province of copyright and the province of patent, respectively) as it applies to computer programs — a distinction not only blurred by the court of appeals, but in effect obliterated by it. Technological advances in this nation move far too quickly and are far too important to allow the present confusion to remain. The Court should grant certiorari either to reaffirm the vitality of *Baker* and its teachings or to reject it.

12. Apple has not received, or even applied for, patents for any of its operating systems involved here (CR 45 at 127), and so it is not entitled to a monopoly over its technology.

III. THE COURT OF APPEALS HAS CREATED CONFUSION CONCERNING THE VITALITY OF THE IDEA/EXPRESSION DICHOTOMY SET FORTH IN BAKER v. SELDEN AND CODIFIED IN THE COPYRIGHT ACT.

Section 102(b) of the Copyright Act, which codifies the *Baker* doctrine that copyright law may not be used to obtain a monopoly over an idea, mandates that a distinction be drawn between an "idea," which is *not* protectible by copyright, and an "expression" of that idea, which may be entitled to copyright protection.¹³ The dichotomy is not easy to apply in the computer field where computer instructions themselves become part of the machine and often merge the idea and expression in one work. The court of appeals might have waited for elucidation by the court below after full development of the relevant facts at trial. Unfortunately, the court of appeals addressed the idea/expression dichotomy, and undertook to formulate a guiding standard. However, it confused rather than clarified. The circuit court's lack of guidance on this issue not only poses a serious problem for its district court, which must conduct further proceedings in this case,¹⁴ but will also confound the many other district courts that will be faced with applying the idea/expression dichotomy to similar works in pending and prospective cases.

13. Section 102(b) provides: "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work." 17 U.S.C. § 102(b).

14. The court of appeals acknowledged that the district court had made no findings as to whether the works in suit represent the only means of expressing the ideas underlying them. 714 F.2d at 1253, A 27. The district court will be faced with that task on remand and will look to the court of appeals' opinion for guidance.

The court of appeals did correctly recognize that this case involves the idea/expression "merger doctrine," which focuses on whether the idea underlying a work can be expressed in a plurality of ways or whether the form of expression is largely dictated by the underlying subject matter so that there is only a limited number of modes of expression. 714 F.2d at 1253, A 26-27. If the latter is true, the idea and expression have "merged," and the work is not copyrightable. *Id.* That concept, of course, is the progeny of the *Baker* doctrine and reflects the overriding principle embodied in Section 102(b) of the Copyright Act.

However, the court of appeals then tried to provide guidelines for the application of the merger doctrine to computer operating systems by stating that:

"[t]he idea which may merge with the expression, thus making the copyright unavailable, is the idea which is the subject of the expression." 714 F.2d at 1253, A 27.

The court's guideline is simply a tautological statement of the idea/expression merger doctrine. Such a tautology will not guide the courts or the computer industry. The court of appeals' further statement that the idea/expression merger issue is a "metaphysical issue" (*id.*) only reveals its inability to formulate a guideline and offers no assistance.

The court of appeals did make an elliptical statement that seemed to denigrate compatibility as an element of an idea because compatibility has commercial objectives. 714 F.2d at 1253, A 27. However, that observation is illogical and ad hoc; an idea does not become a non-idea merely because it has commercial objectives.

The error of the court of appeals' analysis is not only that it has chosen aphorisms and metaphysics as its own

mode of expression, but also that it has failed to provide a meaningful definition of the idea that is to be compared with the expression in order to resolve the issue of merger. At the very least, the court of appeals should have provided meaningful guidelines defining the scope of the idea that is to be compared with the expression. For example, if the idea of Apple's work, Autostart ROM, is viewed as simply the starting of any computer, then obviously there may be many possible expressions of that. If the idea is viewed as starting a computer by use of an operating system embedded in a ROM, the possible expressions of that idea are fewer. If the idea is viewed as starting a computer that will be compatible with a great percentage of the available application programs, then the possible expressions of that idea may be fewer still. If the idea is viewed as starting a computer that will be compatible with most of the available application programs, then the possible expressions of that idea may be so few as to constitute a merger of idea and expression.

Of course, the process of applying the idea/expression merger doctrine is not easy, but it deserves more than the superficial treatment that the court of appeals was able to give it. The court of appeals' inability to define an idea/expression standard, and its resort to tautological or metaphysical analysis will only confuse the lower courts when they are required to apply the idea/expression dichotomy, especially in cases involving high technology. This issue alone deserves this Court's attention. The necessary guidance by this Court now will obviate time-consuming, costly and error-producing litigation that is bound to arise in the absence of a clear standard.

IV. THE COURT OF APPEALS WRONGLY INTERPRETED THE 1980 AMENDMENTS TO OVERRIDE SECTION 102(b) OF THE COPYRIGHT ACT AS IT PERTAINS TO COMPUTER PROGRAMS.

The court of appeals has taken the bold step of utilizing the general definition of "computer program" (added by a 1980 amendment to the Copyright Act) in order to override Section 102(b) of the Act, which excludes from copyright protection, *inter alia*, "processes," "systems," "methods of operation," and "ideas."¹⁵ The court of appeals reasoned this way:

"Perhaps the most convincing item leading us to reject Franklin's argument [that Section 102(b) precludes copyright protection for Apple's works] is that the statutory definition of a computer program as a set of instructions to be used in a computer in order to bring about a certain result, 17 U.S.C. § 101, makes no distinction between application programs and operating programs." 714 F.2d at 1252, A 24.

15. Although we read the opinion as saying merely that with respect to copyrightability under Section 102(b), there is no distinction *per se* between operating systems and application programs, some commentators have interpreted the court of appeals' decision as ruling that all computer programs are *per se* copyrightable. See, e.g., N.Y. Times, Sept. 2, 1983, footnote 1, *supra*. Such a reading would be a clear departure from the language of Section 102(b); would override the constitutional concerns underlying Section 102(b); would fly in the face of congressional intent; and would vitiate the section. That such a reading could be given the court of appeals' opinion underscores the confusion it has engendered and is, in itself, good reason for this Court to review the case upon a writ of certiorari.

In short, because the definition of "computer program" added by the 1980 Amendments to the Copyright Act¹⁶ makes no distinction between operating systems and application programs, the court of appeals draws the reductionist conclusion that all computer "programs" are copyrightable.¹⁷

By thus giving substantive effect to the definition of "computer program" in the Act and failing to recognize the predominance of Section 102(b)'s limitation on copyrightability, the court of appeals has imbued the statutory definition with unprecedented significance and rendered Section 102(b) totally inapplicable in the computer context.

The court of appeals has erroneously and seriously misconceived the effect of the 1980 Amendments to the Copyright Act. Those amendments merely added a general definition of "computer program" to Section 101, the Act's definitional section, and a provision pertaining to the limitations on exclusive rights in computer programs. See 17 U.S.C.A. § 117 (West Supp. 1983).

16. Section 101 of the Copyright Act defines a "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

17. The court of appeals further confused this issue by announcing (714 F.2d at 1251, A 22) that the "medium is not the message," as if that adaptation of Marshall McLuhan's aphorism were a basis for rejecting Franklin's argument under Section 102(b). That statement evinces a serious misunderstanding of Franklin's argument that Apple's operating systems are an essential functional element of the machine, and therefore not copyrightable, *regardless* of the form or medium in which they are embodied, as indeed Section 102(b) specifically provides. See footnote 13, *supra*. In short, that "the medium is *not* the message" is one of Franklin's arguments and, another point the court of appeals misapprehended.

While Congress was generally receptive to new technology and "imagination and creativity in computer programming" (714 F.2d at 1253-54, A 28), Congress certainly did not, by adding "computer program" to the definition section of the Act, intend to override Section 102(b), reflecting as it does the balance between competing social policies and the constitutionally-based distinction between patent and copyright.

If the 1980 amendment of the definition section had been intended to have the far-reaching effect of amending and altering the substantive provisions of Section 102(b), Congress surely would have so indicated. It never did. Indeed, when Congress drafted Section 102(b), it had in mind the special copyright problems computer programs can pose. The legislative history clearly indicates that Congress intended computer programs to be copyrightable *only* "to the extent that they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves," H.R. Rep. No. 94-1476, 94th Cong., 2d Sess. 1, 54, 1976 U.S. Code Cong. & Ad. News 5659, 5667, and that "the actual processes or methods embodied in the program are *not* within the scope of copyright law," *id.* at 57, 1976 U.S. Code Cong. & Ad. News 5670 (emphasis added). In other words, the exclusory language of Section 102(b) was meant to govern computer programs, just as it does all other potentially copyrightable subject matter. Clearly, computer programs were not to be exempt from the application of 102(b).

The error of the court of appeals' statutory construction has serious consequences. If its novel and unwarranted approach to statutory construction of the Copyright Act is left uncorrected, it will have a profound effect on high technology even far beyond the computer industry.

V. THIS COURT SHOULD CLARIFY THE RELEVANCE OF IRREPARABLE HARM IN PRELIMINARY INJUNCTION CASES INVOLVING CLAIMS OF COPYRIGHT INFRINGEMENT.

When a preliminary injunction is sought, the party seeking such equitable relief must demonstrate both a likelihood of success on the merits and irreparable harm. *See Brown v. Chote*, 411 U.S. 452, 456 (1973). In copyright cases, however, some courts have eliminated the irreparable harm standard, holding that if a prima facie case of copyright infringement is made, irreparable harm will be presumed and need not be demonstrated. *See Atari, Inc. v. North American Philips Consumer Electronics Corp.*, 672 F.2d 607 (7th Cir.), *cert. denied*, U.S. , 103 S. Ct. 176 (1982); *Wainwright Sec., Inc. v. Wall St. Transcript Corp.*, 558 F.2d 91 (2d Cir. 1977), *cert. denied*, 434 U.S. 1014 (1978). The court of appeals followed that approach in this case and eliminated irreparable harm as an independent element to be weighed by the trial court. 714 F.2d at 1254, A 28-29.

It is a curious phenomenon that some federal courts treat injunctive relief in copyright cases differently than in other cases where equitable relief is sought. Yet any basis for such favored treatment of copyright plaintiffs has never been satisfactorily enunciated. Neither in logic nor historic jurisprudence is there any reason to treat the irreparable harm requirement differently in copyright cases than in other cases. Indeed, the balancing of irreparable harm should be an essential element for the grant of preliminary relief in any case; it functions as a safeguard to help insure that such relief is not granted except when exigency so requires. That holds true in copyright as well as in other cases.

With the increasing number of copyright cases in this communication-oriented age, it is surely time for this Court to clarify the role that the irreparable harm requirement is to play in copyright cases. If that equitable requirement is to be rendered inapplicable to copyright plaintiffs, it ought only to be after this Court's decision.

CONCLUSION

For each and all of the foregoing reasons, a writ of certiorari should be granted.

Respectfully submitted,

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October 28, 1983

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Appendix

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 82-1582

APPLE COMPUTER, INC.,
a California corporation,

Appellant

v.

FRANKLIN COMPUTER CORPORATION,
a Pennsylvania corporation

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA
(D. C. Civil No. 82-2107)

Argued March 17, 1983

Before: HUNTER, HIGGINBOTHAM and SLOVITER,

Circuit Judges

(Opinion filed August 30, 1983)

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OPINION OF THE COURT

SLOVITER, Circuit Judge.

I. INTRODUCTION

Apple Computer, Inc. appeals from the district court's denial of a motion to preliminarily enjoin Franklin Computer Corp. from infringing the copyrights Apple holds on fourteen computer programs.

The decision to grant or refuse to grant a preliminary injunction is within the discretion of the district court. See *A. O. Smith Corp. v. FTC*, 530 F.2d 515, 525 (3d Cir. 1976). Although the scope of our review of the action of the district court in ruling on a motion for preliminary injunction is narrow, reversal is warranted if the trial court has abused its discretion or committed error in applying the law. *Kennecott Corp. v. Smith*, 637 F.2d 181, 187 (3d Cir. 1980). As the Second Circuit has stated recently, "Despite oft repeated statements that the issuance of a preliminary injunction rests in the discretion of the trial judge whose decisions will be reversed only for 'abuse', a court of appeals must reverse if the district court has proceeded on the basis of an erroneous view of the applicable law." *Donovan v. Bierwirth*, 680 F.2d 263, 269 (2d Cir.), *cert. denied*, 103 S.Ct. 488 (1982).

In this case the district court denied the preliminary injunction, *inter alia*, because it had "some doubt as to the copyrightability of the programs." *Apple Computer, Inc. v. Franklin Computer Corp.*, 545 F. Supp. 812, 812 (E.D. Pa. 1982). This legal ruling is fundamental to all future proceedings in this action and, as the parties and amici curiae seem to agree, has considerable significance to the computer services industry.¹ Because we conclude that

1. Four amicus curiae briefs have been submitted; briefs from Digital Research Inc., Microsoft Corp., and Association of Data Processing Service Organizations, Inc. (a trade association for the computer services industry), support the position of Apple, and a brief from Pro-log Corp. supports at least part of Franklin's position.

the district court proceeded under an erroneous view of the applicable law, we reverse the denial of the preliminary injunction and remand.

II. FACTS AND PROCEDURAL HISTORY

Apple, one of the computer industry leaders, manufactures and markets personal computers (microcomputers), related peripheral equipment such as disk drives (peripherals), and computer programs (software). It presently manufactures Apple II computers and distributes over 150 programs. Apple has sold over 400,000 Apple II computers, employs approximately 3,000 people, and had annual sales of \$335,000,000 for fiscal year 1981. One of the byproducts of Apple's success is the independent development by third parties of numerous computer programs which are designed to run on the Apple II computer.

Franklin, the defendant below, manufactures and sells the ACE 100 personal computer and at the time of the hearing employed about 75 people and had sold fewer than 1,000 computers. The ACE 100 was designed to be "Apple compatible," so that peripheral equipment and software developed for use with the Apple II computer could be used in conjunction with the ACE 100. Franklin's copying of Apple's operating system computer programs in an effort to achieve such compatibility precipitated this suit.

Like all computers both the Apple II and ACE 100 have a central processing unit (CPU) which is the integrated circuit that executes programs. In lay terms, the CPU does the work it is instructed to do. Those instructions are contained on computer programs.

There are three levels of computer language in which computer programs may be written.² High level language, such as the commonly used BASIC or FORTRAN, uses English words and symbols, and is relatively easy to learn and understand (e.g., "GO TO 40" tells the computer to skip intervening steps and go to the step at line 40). A somewhat lower level language is assembly language, which consists of alphanumeric labels (e.g., "ADC" means "add with carry"). Statements in high level language, and apparently also statements in assembly language, are referred to as written in "source code." The third, or lowest level computer language, is machine language, a binary language using two symbols, 0 and 1, to indicate an open or closed switch (e.g., "01101001" means, to the Apple, add two numbers and save the results). Statements in machine language are referred to as written in "object code."

The CPU can only follow instructions written in object code. However, programs are usually written in source code which is more intelligible to humans. Programs written in source code can be converted or translated by a "compiler" program into object code for use by the computer. Programs are generally distributed only in their object code version stored on a memory device.

A computer program can be stored or fixed on a variety of memory devices, two of which are of particular relevance for this case. The ROM (Read Only Memory) is an internal permanent memory device consisting of a semi-conductor "chip" which is incorporated into the circuitry of the computer. A program in object code is embedded on a ROM before it is incorporated in the computer. Information stored on a ROM can only be

2. Useful nontechnical descriptions of computer operations appear in Note, *Copyright Protection for Computer Programs In Read Only Memory Chips*, 11 Hofstra L. Rev. 329 (1982), and Note, *Copyright Protection of Computer Program Object Code*, 96 Harv. L. Rev. 1723 (1983).

read, not erased or rewritten.³ The ACE 100 apparently contains EPROMS (Erasable Programmable Read Only Memory) on which the stored information can be erased and the chip reprogrammed, but the district court found that for purposes of this proceeding, the difference between ROMs and EPROMs is inconsequential. 545 F. Supp. at 813 n.3. The other device used for storing the programs at issue is a diskette or "floppy disk", an auxiliary memory device consisting of a flexible magnetic disk resembling a phonograph record, which can be inserted into the computer and from which data or instructions can be read.

Computer programs can be categorized by function as either application programs or operating system programs. Application programs usually perform a specific task for the computer user, such as word processing, checkbook balancing, or playing a game. In contrast, operating system programs generally manage the internal functions of the computer or facilitate use of application programs. The parties agree that the fourteen computer programs at issue in this suit are operating system programs.⁴

3. In contrast to the permanent memory devices a RAM (Random Access Memory) is a chip on which volatile internal memory is stored which is erased when the computer's power is turned off.

4. The fourteen programs at issue, briefly described, are:

(1) *Autostart ROM* is sold as part of the Apple Computer and is embedded on a ROM chip. The program has also been published in source code as part of a copyrighted book, the Apple II manual. When the computer's power is turned on, Autostart ROM performs internal routines that turn on the circuits in the computer and make its physical parts (e.g. input/output devices, screen, and memory) ready for use.

(2) *Applesoft* is Apple's version of the Beginner's All-purpose Symbolic Instruction Code (BASIC) language. The program is stored in ROM and is sold as part of the computer. Applesoft translates instructions written in the higher-level BASIC language into the lower-level machine code that the computer understands.

Apple filed suit in the United States District Court for the Eastern District of Pennsylvania pursuant to 28 U.S.C. §1338 on May 12, 1982, alleging that Franklin was liable for copyright infringement of the fourteen computer programs, patent infringement, unfair competition,

4. (Cont'd)

(3) *Floating-Point BASIC* is the same program as Applesoft but is stored on disks rather than on ROMs. It is used in earlier versions of the Apple II computer that did not have the Applesoft program in ROM.

(4) *Apple Integer BASIC*, another translator program, is stored on the DOS 3.3 Master Disk. This program used Apple's first version of BASIC for the Apple II computer. It implements a simpler version of the Applesoft program.

(5) *DOS 3.3*, the disk operating system program, provides the instructions necessary to control the operation between the disk system (disk drive) and the computer itself. It controls the reading and writing functions of the disks and includes other routines which put all the data transfers in sequence. The DOS 3.3 Master Disk is sold separately from the computer, and includes several of the other operating programs referred to in this note.

(6) *Master Create* is stored on a disk. When a disk is prepared for use the DOS 3.3 program is placed on that disk in a form that is dependent on the amount of Random Access Memory (RAM) available. The Master Create program replaces the DOS 3.3 on the disk with a version that is independent of the amount of RAM available.

(7) *Copy*, which is stored on a disk, enables the user to copy programs written in Apple Integer BASIC from one disk to another.

(8) *Copy A*, also stored on a disk, enables the user to copy programs written in Applesoft from one disk to another.

(9) *Copy OBJO* contains a file of subroutines used by the Copy and Copy A programs.

(10) *Chain*, another disk stored program, allows data to be passed between different parts of a program when only one part of the program is in RAM at a given time. Thus, Chain preserves data already stored in RAM while another part of the program is being loaded into RAM.

and misappropriation. Franklin's answer in respect to the copyright counts included the affirmative defense that the programs contained no copyrightable subject matter. Franklin counterclaimed for declaratory judgment that the copyright registrations were invalid and unenforceable, and sought affirmative relief on the basis of Apple's alleged misuse. Franklin also moved to dismiss eleven of the fourteen copyright infringement counts on the ground that Apple failed to comply with the procedural requirements for suit under 17 U.S.C. §§410, 411.

After expedited discovery, Apple moved for a preliminary injunction to restrain Franklin from using, copy-

4. (Cont'd)

(11) *Hello*, also disk stored, is the first program executed after the power is turned on and a disk is ready for use. It determines how much RAM is in the computer and which version of BASIC needs to be loaded into the computer.

(12) *Boot 13* is stored on disk and sold on a Master Disk. It allows the user having a disk controller card that contains the Apple 16-Sector Boot ROM to use older versions of the Apple disk operating system.

(13) *Apple 13-Sector Boot ROM* is stored in a ROM located on the disk controller card plugged into the Mother Board. By turning on numerous circuits on the card and in the Apple II computer, this program causes other parts of the disk operating system used for 13-Sector format disks to load.

(14) *Apple 16-Sector Boot ROM*, stored in a ROM located on the disk controller card, turns on numerous circuits on the card and in the Apple II computer and causes other parts of the disk operating system used for 16-Sector format disks to load. It therefore enables the user to start or permit the running of another program or to prepare the computer to receive a program.

The above descriptions represent an effort to translate the language used by computer experts into language reasonably intelligible to lay persons. They differ in some respects from the descriptions in the district court's opinion, 545 F. Supp. at 815-16, which were taken from the complaint.

ing, selling, or infringing Apple's copyrights. The district court held a three day evidentiary hearing limited to the copyright infringement claims. Apple produced evidence at the hearing in the form of affidavits and testimony that programs sold by Franklin in conjunction with its ACE 100 computer were virtually identical with those covered by the fourteen Apple copyrights. The variations that did exist were minor, consisting merely of such things as deletion of reference to Apple or its copyright notice.⁵ James Huston, an Apple systems programmer, concluded that the Franklin programs were "unquestionably copied from Apple and could not have been independently created." He reached this conclusion not only because it is "almost impossible for so many lines of code" to be identically written, but also because his name, which he had embedded in one program (Master Create), and the word "Applesoft", which was embedded in another (DOS 3.3), appeared on the Franklin master disk. Apple estimated the "works in suit" took 46 man-months to produce at a cost of over \$740,000, not including the time or cost of creating or acquiring earlier versions of the programs or the expense of marketing the programs.

Franklin did not dispute that it copied the Apple programs. Its witness admitted copying each of the works in suit from the Apple programs. Its factual defense was directed to its contention that it was not feasible for Franklin to write its own operating system programs. David McWherter, now Franklin's vice-president of engineering, testified he spent 30-40 hours in November 1981 making a study to determine if it was feasible for Franklin to write its own Autostart ROM program and concluded

5. For example, 8 bytes of memory were altered in the Autostart ROM program so that when the computer is turned on "ACE 100" appears on the screen rather than "Apple II." The Franklin DOS 3.3 program also had 16 bytes (out of 9000) that allowed use of upper and lower case.

it was not because "there were just too many entry points in relationship to the number of instructions in the program." Entry points at specific locations in the program can be used by programmers to mesh their application programs with the operating system program. McWherter concluded that use of the identical signals was necessary in order to ensure 100% compatibility with application programs created to run on the Apple computer. He admitted that he never attempted to rewrite Autostart ROM and conceded that some of the works in suit (*i.e.* Copy, Copy A, Master Create, and Hello) probably could have been rewritten by Franklin. Franklin made no attempt to rewrite any of the programs prior to the lawsuit except for Copy, although McWherter testified that Franklin was "in the process of redesigning" some of the Apple programs and that "[w]e had a fair degree of certainty that that would probably work." Apple introduced evidence that Franklin could have rewritten programs, including the Autostart ROM program, and that there are in existence operating programs written by third parties which are compatible with Apple II.

Franklin's principal defense at the preliminary injunction hearing and before us is primarily a legal one, directed to its contention that the Apple operating system programs are not capable of copyright protection.

The district court denied the motion for preliminary injunction by order and opinion dated July 30, 1982. Apple moved for reconsideration in light of this court's decision in *Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870 (3d Cir. 1982), which was decided August 2, 1982, three days after the district court decision. The district court denied the motion for reconsideration. We have jurisdiction of Apple's appeal pursuant to 28 U.S.C. §1292(a)(1).

III. THE DISTRICT COURT OPINION

In its opinion, the district court referred to the four factors to be considered on request for a preliminary injunction: a reasonable probability of success on the merits; irreparable injury; the improbability of harm to other interested persons; and the public interest. 545 F. Supp. at 825; see *Delaware River Port Authority v. Transamerican Trailer Transport, Inc.*, 501 F.2d 917, 919-20 (3d Cir. 1974). The court stated it based its denial of the motion on the first two factors. The court held Apple had not made the requisite showing of likelihood of success on the merits because it "concluded that there is some doubt as to the copyrightability of the programs described in this litigation." 545 F. Supp. at 812. It also stated that "Apple is better suited to withstand whatever injury it might sustain during litigation than is Franklin to withstand the effects of a preliminary injunction" because an injunction would have a "devastating effect" on Franklin's business, *id.* at 825, apparently concluding on that basis that Apple had failed to show irreparable harm.

It is difficult to discern precisely why the district court questioned the copyrightability of the programs at issue since there is no finding, statement, or holding on which we can focus which clearly sets forth the district court's view. Throughout the opinion the district court referred to the "complexity of the question presented by the present case", 545 F. Supp. at 824, and the "baffling" problem at issue. *Id.* at 822.

The opinion expresses a series of generalized concerns which may have led the court to its ultimate conclusion, and which the parties and amici treat as holdings. The district court referred to the requirement under the Copyright Act of finding "original works of authorship", 17 U.S.C. §102(a), and seems to have found that there was a sufficient "modicum of creativity" to satisfy the statutory requirement of an "original work". 545 F. Supp.

at 820-21. The court was less clear as to whether the creation of a computer program by a programmer satisfied the requirement of "works of authorship", *id.*, and whether an operating system program in "binary code or one represented either in a ROM or by micro-switches" was an "expression" which could be copyrighted as distinguished from an "idea" which could not be. *Id.* at 821:

Again, although we cannot point to a specific holding, running throughout the district court opinion is the suggestion that programs in object code and ROMs may not be copyrightable. Thus, for example, in a series of discursive footnotes, the district court stated that it found "persuasive" a district court opinion "holding that object code in ROM is not copyright protected", 545 F. Supp. at 818 n.8 (referring to *Data Cash Systems, Inc. v. JS&A Group, Inc.*, 480 F. Supp. 1063 (N.D. Ill. 1979), *aff'd on other grounds*, 628 F.2d 1038 (7th Cir. 1980)); described an opinion reaching a contrary conclusion as containing "rather terse analysis [which] provides little guidance", 545 F. Supp. at 818 n.8 (referring to *GCA Corp. v. Chance*, 217 U.S.P.Q. 718 (N.D. Cal. 1982), which followed the reasoning of *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171 (N.D. Cal. 1981)); and stated that "Congressional intent regarding the copyrightability of object codes and ROMs is not clear", 545 F. Supp. at 819 n.9, and that even among members of the industry it was not clear that the copyright law protects works "like those in suit that are ROM-based," *id.* at 819 n.10.

We read the district court opinion as presenting the following legal issues: (1) whether copyright can exist in a computer program expressed in object code, (2) whether copyright can exist in a computer program embedded on a ROM, (3) whether copyright can exist in an operating system program, and (4) whether independent irreparable harm must be shown for a preliminary injunction in copyright infringement actions.

IV. DISCUSSION

A. Copyrightability of a Computer Program Expressed in Object Code

Certain statements by the district court suggest that programs expressed in object code, as distinguished from source code, may not be the proper subject of copyright. We find no basis in the statute for any such concern. Furthermore, our decision in *Williams Electronics, Inc. v. Artic International, Inc.*, *supra*, laid to rest many of the doubts expressed by the district court.

In 1976, after considerable study, Congress enacted a new copyright law to replace that which had governed since 1909. Act of October 19, 1976, Pub. L. No. 94-553, 90 Stat. 2541 (*codified at* 17 U.S.C. §§101 *et seq.*). Under the law, two primary requirements must be satisfied in order for a work to constitute copyrightable subject matter—it must be an “original wor[k] of authorship” and must be “fixed in [a] tangible medium of expression.” 17 U.S.C. §102(a). The statute provides:

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.

Id. The statute enumerates seven categories under “works of authorship” including “literary works”, defined as follows:

“Literary works” are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied.

17 U.S.C. §101. A work is "fixed" in a tangible medium of expression when:

its embodiment in a copy or phonorecord, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. A work consisting of sounds, images, or both, that are being transmitted, is "fixed" for purposes of this title if a fixation of the work is being made simultaneously with its transmission.

Id.

Although section 102(a) does not expressly list computer programs as works of authorship, the legislative history suggests that programs were considered copyrightable as literary works. See H.R. Rep. No. 1476, 94th Cong., 2d Sess. 54, *reprinted in* 1976 U.S. Code Cong. & Ad. News 5659, 5667 (" 'literary works' . . . includes . . . computer programs"). Because a Commission on New Technological Uses ("CONTU") had been created by Congress to study, *inter alia*, computer uses of copyrighted works, Pub. L. No. 93-573, §201, 88 Stat. 1873 (1974), Congress enacted a status quo provision, section 117, in the 1976 Act concerning such computer uses pending the CONTU report and recommendations.⁶

The CONTU Final Report recommended that the copyright law be amended, *inter alia*, "to make it explicit that computer programs, to the extent that they embody an author's original creation, are proper subject matter of copyright." National Commission on New Technolog-

6. Section 117 applied only to the scope of protection to be accorded copyrighted works when used in conjunction with a computer and not to the copyrightability of programs. H.R. Rep. No. 1476, at 116, *reprinted in* 1976 U.S. Code Cong. & Ad. News at 5731.

ical Uses of Copyrighted Works, *Final Report 1* (1979) [hereinafter CONTU Report]. CONTU recommended two changes relevant here: that section 117, the status quo provision, be repealed and replaced with a section limiting exclusive rights in computer programs so as "to ensure that rightful possessors of copies of computer programs may use or adapt these copies for their use," *id.*; and that a definition of computer program be added to section 101. *Id.* at 12. Congress adopted both changes. Act of Dec. 12, 1980, Pub. L. No. 96-517, §10, 94 Stat. 3015, 3028. The revisions embodied CONTU's recommendations to clarify the law of copyright of computer software. H.R. Rep. No. 1307, 96th Cong., 2d Sess. 23, reprinted in 1980 U.S. Code Cong. & Ad. News 6460, 6482.

The 1980 amendments added a definition of a computer program:

A "computer program" is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.

17 U.S.C. §101. The amendments also substituted a new section 117 which provides that "it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program" when necessary to "the utilization of the computer program" or "for archival purposes only." 17 U.S.C. §117. The parties agree that this section is not implicated in the instant lawsuit. The language of the provision, however, by carving out an exception to the normal proscriptions against copying, clearly indicates that programs are copyrightable and are otherwise afforded copyright protection.

We considered the issue of copyright protection for a computer program in *Williams Electronics, Inc., v. Artic International, Inc.*, and concluded that "the copyrightability of computer programs is firmly established after

the 1980 amendment to the Copyright Act." 685 F.2d at 875. At issue in *Williams* were not only two audiovisual copyrights to the "attract" and "play" modes of a video game, but also the computer program which was expressed in object code embodied in ROM and which controlled the sights and sounds of the game. Defendant there had argued "that when the issue is the copyright on a computer program, a distinction must be drawn between the 'source code' version of a computer program, which . . . can be afforded copyright protection, and the 'object code' stage, which . . . cannot be so protected," an argument we rejected. *Id.* at 876.

The district court here questioned whether copyright was to be limited to works "designed to be 'read' by a human reader [as distinguished from] read by an expert with a microscope and patience", 545 F. Supp. at 821. The suggestion that copyrightability depends on a communicative function to individuals stems from the early decision of *White-Smith Music Publishing Co. v. Apollo Co.*, 209 U.S. 1 (1908), which held a piano roll was not a copy of the musical composition because it was not in a form others, except perhaps for a very expert few, could perceive. See 1 *Nimmer on Copyright* §2.03[B][1] (1983). However, it is clear from the language of the 1976 Act and its legislative history that it was intended to obliterate distinctions engendered by *White-Smith*. H.R. Rep. No. 1476, *supra*, at 52, *reprinted in* 1976 U.S. Code Cong. & Ad. News at 5665.

Under the statute, copyright extends to works in any tangible means of expression "*from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.*" 17 U.S.C. §102(a) (emphasis added). Further, the definition of "computer program" adopted by Congress in the 1980 amendments is "*sets of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.*" 17 U.S.C. §101 (emphasis added).

As source code instructions must be translated into object code before the computer can act upon them, only instructions expressed in object code can be used "directly" by the computer. See *Midway Manufacturing Co. v. Strohon*, No. 82 C 1305, slip op. at 25-26 (N.D. Ill. June 1, 1983). This definition was adopted following the CONTU Report in which the majority clearly took the position that object codes are proper subjects of copyright. See CONTU Report at 21. The majority's conclusion was reached although confronted by a dissent based upon the theory that the "machine-control phase" of a program is not directed at a human audience. See CONTU Report at 28-30 (dissent of Commissioner Hersey).

The defendant in *Williams* had also argued that a copyrightable work "must be intelligible to human beings and must be intended as a medium of communication to human beings," *id.* at 876-77. We reiterate the statement we made in *Williams* when we rejected that argument: "[t]he answer to defendant's contention is in the words of the statute itself." 685 F.2d at 877.

The district court also expressed uncertainty as to whether a computer program in object code could be classified as a "literary work."⁷ However, the category of "literary works", one of the seven copyrightable categories, is not confined to literature in the nature of Hemingway's *For Whom the Bell Tolls*. The definition of "literary works" in section 101 includes expression not

7. The district court stated that a programmer working directly in object code appears to think more as a mathematician or engineer, that the process of constructing a chip is less a work of authorship than the product of engineering knowledge, and that it may be more apt to describe an encoded ROM as a pictorial three-dimensional object than as a literary work. 545 F. Supp. at 821-22. The district court's remarks relied in part on a quotation about "microcode", see *id.* at 821 n.14; Apple introduced testimony that none of the works in suit contain "microcode." Moreover, Apple does not seek to protect the ROM's architecture but only the program encoded upon it.

only in words but also "numbers, or other . . . numerical symbols or indicia", thereby expanding the common usage of "literary works." Cf. *Harcourt, Brace & World, Inc. v. Graphic Controls Corp.*, 329 F. Supp. 517, 523-24 (S.D.N.Y. 1971) (the symbols designating questions or response spaces on exam answer sheets held to be copyrightable "writings" under 1909 Act); *Reiss v. National Quotation Bureau, Inc.*, 276 F. 717 (S.D.N.Y. 1921) (code book of coined words designed for cable use copyrightable). Thus a computer program, whether in object code or source code, is a "literary work" and is protected from unauthorized copying, whether from its object or source code version. *Accord Midway Mfg. Co. v. Strohon*, slip op. at 25-27; see also *GCA Corp. v. Chance*, 217 U.S.P.Q. at 719-20.

B. Copyrightability of a Computer Program Embedded on a ROM

Just as the district court's suggestion of a distinction between source code and object code was rejected by our opinion in *Williams* issued three days after the district court opinion, so also was its suggestion that embodiment of a computer program on a ROM, as distinguished from in a traditional writing, detracts from its copyrightability. In *Williams* we rejected the argument that "a computer program is not infringed when the program is loaded into electronic memory devices (ROMs) and used to control the activity of machines." 685 F.2d at 876. Defendant there had argued that there can be no copyright protection for the ROMs because they are utilitarian objects or machine parts. We held that the statutory requirement of "fixation", the manner in which the issue arises, is satisfied through the embodiment of the expression in the ROM devices. *Id.* at 874, 876; see also *Midway Mfg. Co. v. Strohon*, slip op. at 27-30; *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. at 173; cf. *Stern Electronics, Inc. v. Kaufman*, 669 F.2d 852, 855-56 (2d

Cir. 1982) (audiovisual display of video game "fixed" in ROM). Therefore we reaffirm that a computer program in object code embedded in a ROM chip is an appropriate subject of copyright. See also *Note, Copyright Protection of Computer Program Object Code*, 96 Harv. L. Rev. 1723 (1983); *Note, Copyright Protection for Computer Programs in Read Only Memory Chips*, 11 Hofstra L. Rev. 329 (1982).

C. Copyrightability of Computer Operating System Programs

We turn to the heart of Franklin's position on appeal which is that computer operating system programs, as distinguished from application programs, are not the proper subject of copyright "regardless of the language or medium in which they are fixed." Brief of Appellee at 15 (emphasis deleted). Apple suggests that this issue too is foreclosed by our *Williams* decision because some portion of the program at issue there was in effect an operating system program. Franklin is correct that this was not an issue raised by the parties in *Williams* and it was not considered by the court. Thus we consider it as a matter of first impression.

Franklin contends that operating system programs are *per se* excluded from copyright protection under the express terms of section 102(b) of the Copyright Act, and under the precedent and underlying principles of *Baker v. Selden*, 101 U.S. 99 (1879). These separate grounds have substantial analytic overlap.

In *Baker v. Selden*, plaintiff's testator held a copyright on a book explaining a bookkeeping system which included blank forms with ruled lines and headings designed for use with that system. Plaintiff sued for copyright infringement on the basis of defendant's publication of a book containing a different arrangement of the columns and different headings, but which used a similar

plan so far as results were concerned. The Court, in reversing the decree for the plaintiff, concluded that blank account-books were not the subject of copyright and that "the mere copyright of Selden's book did not confer upon him the exclusive right to make and use account-books, ruled and arranged as designated by him and described and illustrated in said book." *Id.* at 107. The Court stated that copyright of the books did not give the plaintiff the exclusive right to use the system explained in the books, noting, for example, that "copyright of a work on mathematical science cannot give to the author an exclusive right to the methods of operation which he propounds." *Id.* at 103.

Franklin reads *Baker v. Selden* as "stand[ing] for several fundamental principles, each presenting . . . an insuperable obstacle to the copyrightability of Apple's operating systems." It states:

First, Baker teaches that use of a system itself does not infringe a copyright on the description of the system. *Second, Baker* enunciates the rule that copyright does not extend to purely utilitarian works. *Finally, Baker* emphasizes that the copyright laws may not be used to obtain and hold a monopoly over an idea. In so doing, *Baker* highlights the principal difference between the copyright and patent laws — a difference that is highly pertinent in this case.

Brief of Appellee at 22.

Section 102(b) of the Copyright Act, the other ground on which Franklin relies, appeared first in the 1976 version, long after the decision in *Baker v. Selden*. It provides:

In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

It is apparent that section 102(b) codifies a substantial part of the holding and dictum of *Baker v. Selden*. See 1 *Nimmer on Copyright* §2.18[D], at 2-207.

We turn to consider the two principal points of Franklin's argument.

1. "Process", "System" or "Method of Operation"

Franklin argues that an operating system program is either a "process", "system", or "method of operation" and hence uncopyrightable.⁸ Franklin correctly notes that underlying section 102(b) and many of the statements for which *Baker v. Selden* is cited is the distinction which must be made between property subject to the patent law, which protects discoveries, and that subject to copyright law, which protect the writings describing such discoveries. However, Franklin's argument misapplies that distinction in this case. Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves. The method would be protected, if at all, by the patent law, an issue as yet unresolved. See *Diamond v. Diehr*, 450 U.S. 175 (1981).

Franklin's attack on operating system programs as "methods" or "processes" seems inconsistent with its concession that application programs are an appropriate subject of copyright. Both types of programs instruct the

8. We are unpersuaded by Franklin's initial contention that Apple is bound to this position because some of Apple's witnesses in the preliminary injunction hearing used these terms in describing the works in suit. As the CONTU Report itself recognized, the distinction between copyrightable computer programs and uncopyrightable processes or methods of operation does not always seem to "shimmer with clarity." CONTU Report at 18. The witnesses undoubtedly had the not uncommon difficulty of finding the precisely correct words of description in this field. It would be both unreasonable and arbitrary to consider the statements of non-lawyer witnesses without experience in using statutory language as words of art to be binding admissions against Apple.

computer to do something. Therefore, it should make no difference for purposes of section 102(b) whether these instructions tell the computer to help prepare an income tax return (the task of an application program) or to translate a high level language program from source code into its binary language object code form (the task of an operating system program such as "Applesoft", *see* note 4 *supra*). Since it is only the instructions which are protected, a "process" is no more involved because the instructions in an operating system program may be used to activate the operation of the computer than it would be if instructions were written in ordinary English in a manual which described the necessary steps to activate an intricate complicated machine. There is, therefore, no reason to afford any less copyright protection to the instructions in an operating system program than to the instructions in an application program.

Franklin's argument, receptively treated by the district court, that an operating system program is part of a machine mistakenly focuses on the physical characteristics of the instructions. But the medium is not the message. We have already considered and rejected aspects of this contention in the discussion of object code and ROM. The mere fact that the operating system program may be etched on a ROM does not make the program either a machine, part of a machine or its equivalent. Furthermore, as one of Franklin's witnesses testified, an operating system does not have to be permanently in the machine in ROM, but it may be on some other medium, such as diskette or magnetic tape, where it could be readily transferred into the temporary memory space of the computer. In fact, some of the operating systems at issue were on diskette. As the CONTU majority stated,

Programs should no more be considered machine parts than videotapes should be considered parts of projectors or phonorecords parts of sound reproduction

equipment. . . . That the words of a program are used ultimately in the implementation of a process should in no way affect their copyrightability.

CONTU Report at 21.

Franklin also argues that the operating systems cannot be copyrighted because they are "purely utilitarian works" and that Apple is seeking to block the use of the art embodied in its operating systems. This argument stems from the following dictum in *Baker v. Selden*:

The very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains. But this object would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book. And where the art it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public; not given for the purpose of publication in other works explanatory of the art, but for the purpose of practical application.

101 U.S. at 103. We cannot accept the expansive reading given to this language by some courts, *see, e.g., Taylor Instrument Companies v. Fawley-Brost Co.*, 139 F.2d 98 (7th Cir. 1943), *cert. denied*, 321 U.S. 785 (1944). In this respect we agree with the views expressed by Professor Nimmer in his treatise. *See 1 Nimmer on Copyright* §2.18[C].

Although a literal construction of this language could support Franklin's reading that precludes copyrightability if the copyright work is put to a utilitarian use, that interpretation has been rejected by a later Supreme Court decision. In *Mazer v. Stein*, 347 U.S. 201, 218 (1954), the

Court stated: "We find nothing in the copyright statute to support the argument that the intended use or use in industry of an article eligible for copyright bars or invalidates its registration. We do not read such a limitation into the copyright law." *Id.* at 218. The CONTU majority also rejected the expansive view some courts have given *Baker v. Selden*, and stated, "That the words of a program are used ultimately in the implementation of a process should in no way affect their copyrightability." *Id.* at 21. It referred to "copyright practice past and present, which recognized copyright protection for a work of authorship regardless of the uses to which it may be put." *Id.* The Commission continued: "The copyright status of the written rules for a game or a system for the operation of a machine is unaffected by the fact that those rules direct the actions of those who play the game or carry out the process." *Id.* (emphasis added). As we previously noted, we can consider the CONTU Report as accepted by Congress since Congress wrote into the law the majority's recommendations almost verbatim. See 18 Cong. Rec. H10767 (daily ed. Nov. 17, 1980) (Rep. Kastenmeier: Bill "eliminates confusion about the legal status of computer software by enacting the recommendations of [CONTU] clarifying the law of copyright of computer software"); 18 Cong. Rec. S14766 (daily ed. Nov. 20, 1980) (Sen. Bayh: "[t]his language reflects that proposed by [CONTU]").

Perhaps the most convincing item leading us to reject Franklin's argument is that the statutory definition of a computer program as a set of instructions to be used in a computer in order to bring about a certain result, 17 U.S.C. §101, makes no distinction between application programs and operating programs. Franklin can point to no decision which adopts the distinction it seeks to make. In the one other reported case to have considered it, *Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775 (C.D. Cal. 1983), the court reached the same conclu-

sion which we do, *i.e.* that an operating system program is not *per se* precluded from copyright. It stated, "There is nothing in any of the statutory terms which suggest a different result for different types of computer programs based upon the function they serve within the machine." *Id.* at 780. Other courts have also upheld the copyrightability of operating programs without discussion of this issue. See *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. at 173 (input-output routine stored in ROM which translated input into machine language in a similar fashion as Applesoft and Apple Integer Basic proper subject of copyright); *GCA Corp. v. Chance*, 217 U.S.P.Q. at 719-20 (object code version of registered source code version of operating programs is the same work and protected).

2. Idea/Expression Dichotomy

Franklin's other challenge to copyright of operating system programs relies on the line which is drawn between ideas and their expression. *Baker v. Selden* remains a benchmark in the law of copyright for the reading given it in *Mazer v. Stein*, *supra*, where the Court stated, "Unlike a patent, a copyright gives no exclusive right to the art disclosed; protection is given only to the expression of the idea — not the idea itself." 347 U.S. at 217 (footnote omitted).

The expression/idea dichotomy is now expressly recognized in section 102(b) which precludes copyright for "any idea." This provision was not intended to enlarge or contract the scope of copyright protection but "to restate . . . that the basic dichotomy between expression and idea remains unchanged." H.R. Rep. No. 1476, *supra*, at 57, reprinted in 1976 U.S. Code Cong. & Ad. News at 5670. The legislative history indicates that section 102(b) was intended "to make clear that the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods

embodied in the program are not within the scope of the copyright law." *Id.*

Many of the courts which have sought to draw the line between an idea and expression have found difficulty in articulating where it falls. See, e.g., *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930) (L. Hand, J.); see discussion in 3 *Nimmer on Copyright* §13.03[A]. We believe that in the context before us, a program for an operating system, the line must be a pragmatic one, which also keeps in consideration "the preservation of the balance between competition and protection reflected in the patent and copyright laws". *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971). As we stated in *Franklin Mint Corp. v. National Wildlife Art Exchange, Inc.*, 575 F.2d 62, 64 (3d Cir.), cert. denied, 439 U.S. 880 (1978), "Unlike a patent, a copyright protects originality rather than novelty or invention." In that opinion, we quoted approvingly the following passage from *Dymow v. Bolton*, 11 F.2d 690, 691 (2d Cir. 1926):

Just as a patent affords protection only to the means of reducing an inventive idea to practice, so the copyright law protects the means of expressing an idea; and it is as near the whole truth as generalization can usually reach that, *if the same idea can be expressed in a plurality of totally different manners, a plurality of copyrights may result, and no infringement will exist.*

(emphasis added).

We adopt the suggestion in the above language and thus focus on whether the idea is capable of various modes of expression. If other programs can be written or created which perform the same function as an Apple's operating system program, then that program is an expression of the idea and hence copyrightable. In essence, this inquiry is no different than that made to determine whether

the expression and idea have merged, which has been stated to occur where there are no or few other ways of expressing a particular idea. See, e.g., *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967); *Freedman v. Grolier Enterprises, Inc.*, 179 U.S.P.Q. 476, 478 (S.D.N.Y. 1973) ("[c]opyright protection will not be given to a form of expression necessarily dictated by the underlying subject matter"); CONTU Report at 20.

The district court made no findings as to whether some or all of Apple's operating programs represent the only means of expression of the idea underlying them. Although there seems to be a concession by Franklin that at least some of the programs can be rewritten, we do not believe that the record on that issue is so clear that it can be decided at the appellate level. Therefore, if the issue is pressed on remand, the necessary finding can be made at that time.

Franklin claims that whether or not the programs can be rewritten, there are a limited "number of ways to arrange operating systems to enable a computer to run the vast body of Apple-compatible software". Brief of Appellee at 20. This claim has no pertinence to either the idea/expression dichotomy or merger. The idea which may merge with the expression, thus making the copyright unavailable, is the idea which is the subject of the expression. The idea of one of the operating system programs is, for example, how to translate source code into object code. If other methods of expressing that idea are not foreclosed as a practical matter, then there is no merger. Franklin may wish to achieve total compatibility with independently developed application programs written for the Apple II, but that is a commercial and competitive objective which does not enter into the somewhat metaphysical issue of whether particular ideas and expressions have merged.

In summary, Franklin's contentions that operating system programs are *per se* not copyrightable is unpersua-

sive. The other courts before whom this issue has been raised have rejected the distinction. Neither the CONTU majority nor Congress made a distinction between operating and application programs. We believe that the 1980 amendments reflect Congress' receptivity to new technology and its desire to encourage, through the copyright laws, continued imagination and creativity in computer programming. Since we believe that the district court's decision on the preliminary injunction was, to a large part, influenced by an erroneous view of the availability of copyright for operating system programs and unnecessary concerns about object code and ROMs, we must reverse the denial of the preliminary injunction and remand for reconsideration.

D. Irreparable Harm

The district court, without any extended discussion, found that Apple had not made the requisite showing of irreparable harm, stating "Apple is better suited to withstand whatever injury it might sustain during litigation than is Franklin to withstand the effects of a preliminary injunction." 545 F. Supp. at 812, 825. In so ruling, the district court failed to consider the prevailing view that a showing of a prima facie case of copyright infringement or reasonable likelihood of success on the merits raises a presumption of irreparable harm. See, e.g., *Atari, Inc. v. North American Philips Consumer Electronics Corp.*, 672 F.2d 607, 620 (7th Cir.), cert. denied, 103 S.Ct. 176 (1982); *Wainwright Securities Inc. v. Wall Street Transcript Corp.*, 558 F.2d 91, 94 (2d Cir. 1977), cert. denied, 434 U.S. 1014 (1978); *Klitzner Industries, Inc. v. H.K. James & Co.*, 535 F. Supp. 1249, 1259 (E.D. Pa. 1982); *Custom Decor, Inc. v. Nautical Crafts Inc.*, 502 F. Supp. 154, 157 (E.D. Pa. 1980). A copyright plaintiff who makes out a prima facie case of infringement is entitled to a preliminary injunction without a detailed showing of irreparable

harm. See 3 *Nimmer on Copyright* §14.06[A], at 14-50, 14-51 & n.16 (collecting authorities).

The CONTU Final Report recognized that "[t]he cost of developing computer programs is far greater than the cost of their duplication." CONTU Report at 11. Apple introduced substantial evidence of the considerable time and money it had invested in the development of the computer programs in suit. Thus even without the presumption of irreparable harm generally applied in copyright infringement cases, the jeopardy to Apple's investment and competitive position caused by Franklin's wholesale copying of many of its key operating programs would satisfy the requirement of irreparable harm needed to support a preliminary injunction. See *Atari, Inc. v. North American Philips Consumer Electronics Corp.*, 672 F.2d at 620; *Custom Decor, Inc. v. Nautical Crafts Inc.*, 502 F. Supp. 154, 157 (E.D. Tenn. 1980); *Herbert Rosenthal Jewelry Corp. v. Zale Corp.*, 323 F. Supp. 1234, 1238 (S.D. N.Y. 1971).

In *Kontes Glass Co. v. Lab Glass, Inc.*, 373 F.2d 319, 320-21 (3d Cir. 1967), this court appeared to adopt an inverse relationship approach to the irreparable harm issue, suggesting that the strength of the required showing of irreparable injury varies inversely with the strength of plaintiff's showing of a likelihood of success on the merits. See *Midway Mfg. Co. v. Bandai-America, Inc.*, 546 F. Supp. 125, 141-42 (D.N.J. 1982). In *Kontes*, we were not presented with a case in which copyrighted material central to the essence of plaintiff's operations was concededly copied, as we are here. We believe the *Kontes* approach is best suited to those cases where the injury from copying can be fairly considered minimal, limited or conjectural. In those circumstances it provides flexibility in applying the equitable remedy of preliminary injunctions through evaluation of the irreparable harm factor. Normally, however, the public interest underlying the copyright law requires a presumption of irreparable harm,

as long as there is, as here, adequate evidence of the expenditure of significant time, effort and money directed to the production of the copyrighted material. Otherwise, the rationale for protecting copyright, that of encouraging creativity, would be undermined. As Judge Broderick stated in *Klitzner Industries, Inc. v. H.K. James & Co.*, 535 F. Supp. at 1259-60:

Since Congress has elected to grant certain exclusive rights to the owner of a copyright in a protected work, it is virtually axiomatic that the public interest can only be served by upholding copyright protections and, correspondingly, preventing the misappropriation of the skills, creative energies, and resources which are invested in the protected work.

Nor can we accept the district court's explanation which stressed the "devastating effect" of a preliminary injunction on Franklin's business. If that were the correct standard, then a knowing infringer would be permitted to construct its business around its infringement, a result we cannot condone. See *Atari, Inc. v. North American Philips Consumer Electronics Corp.*, 672 F.2d at 620; cf. *Helene Curtis Industries, Inc. v. Church & Dwight Co.*, 560 F.2d 1325, 1333 (7th Cir. 1977) (trademark infringement), *cert. denied*, 434 U.S. 1070 (1978). The size of the infringer should not be determinative of the copyright holder's ability to get prompt judicial redress.

E. Additional Issues

Franklin has raised a number of issues concerning Apple's compliance with various statutory formalities such as registration, notice and deposit. It has challenged, in a pending motion to dismiss, the copyrights of the eleven works in suit which were deposited in object code format, and which were registered under the Copyright Office's

"rule of doubt."⁹ Franklin challenges three programs, i.e. Apple Integer Basic, Autostart ROM and DOS 3.3, on the ground that they or their predecessors were published without the requisite notice. We do not reach these issues on appeal nor do we consider Franklin's claim that Apple's misuse of its copyrights bars their enforcement. The district court did not consider these claims in denying the motion for preliminary injunction. There are no factual findings with regard to them. On remand, they can be considered by the district court in the first instance who can also decide the extent to which they are relevant, if at all, to a preliminary injunction.

V.

For the reasons set forth in this opinion, we will reverse the denial of the preliminary injunction and remand to the district court for further proceedings in accordance herewith.

A True Copy:

Teste:

*Clerk of the United States Court of Appeals
for the Third Circuit*

9. Apparently the Register of Copyrights utilizes its rule of doubt when the deposit of a computer program is made in object code form because its examiners cannot interpret such code to determine if there has been copyrightable authorship.

IN THE UNITED STATES DISTRICT COURT
FOR THE
EASTERN DISTRICT OF PENNSYLVANIA

CIVIL ACTION

No. 82-2107

APPLE COMPUTER, INC.

vs.

FRANKLIN COMPUTER CORP.

NEWCOMER, J.

July 30, 1982

Plaintiff Apple Computer, Inc., ("Apple")^{*} moves for a preliminary injunction restraining defendant Franklin Computer Corp. ("Franklin") from using, copying, selling, or infringing in any other way Apple's registered copyrights on fourteen computer programs that are contained in or sold with the Apple II personal computer.

I. THE PARTIES

Apple is a California corporation, acknowledged to be a leader in the field of personal computers. It employs approximately 3,000 people and it has sold almost 400,000 computers. Apple had sales of \$335,000,000 last fiscal year. Franklin is a Pennsylvania corporation, formed in 1981, with 75 employees. It has sold fewer than 1,000 computers.

For reasons more fully expressed below I have concluded that there is some doubt as to the copyrightability of the programs described in this litigation. Because of this doubt, I find that plaintiff has failed to show a reasonable probability of success on the merits and for that reason, as well as a failure to show irreparable harm, I must deny the motion.

II. THE WORKS

A. The "Computers"

The two machines in this case are the Apple II, made by Apple Computer Inc., and the Ace 100, made by Franklin Computer Corporation. Both are generally referred to as microcomputers or personal computers because of their size and their ease of use by individuals and small businesses.

Both computers contain a large flat circuit board, called a "mother board". Mounted on this board, forming the electronic circuitry which is the operating center of the computer, are a number of small integrated circuits or chips. These integrated circuits are described herein and are the focus of this lawsuit.

B. The Integrated Circuits: CPU, RAMs, ROMs, PROMs and EPROMs

Personal computers contain a variety of integrated circuits, which are photo-chemically imprinted silicon chips.¹ Each integrated circuit, or chip, is constructed with a specific size memory or programming capacity. In microcomputers, the capacity of a chip may range from 4,000 bytes (4K of memory) to 64,000 bytes (64k of memory). One "byte" is one cell or one location point for information to be stored in the chip. In turn, on computers like Apple and Ace, each byte has eight "bits" (Binary digIT) each of which specifies the single value of "0" or "1", negative or positive.

Like all computers, both Apple and Ace have a central processing unit ("CPU") which is the specialized integrated circuit that executes binary programs. The CPU

1. The integrated circuit inscribed on a chip is an electro-mechanical pattern that determines a sequence of electrical events that occur *within* a chip only when the chip is performing. See D. Fink, *Computers and the Human Mind* 131-177 (1966).

does the primary calculations required of all programs and shifts answers to other parts of the system depending upon the requirements of the program controlling it. On both Apple and Ace, the CPU uses a 6502 microprocessor chip which has a 64K storage capacity.

In addition to the CPU, which does the calculations, computers have internal memories that hold information generated within the computer or entered into the computer from an external source like a floppy disk or keyboard. The information may be stored in a permanent or impermanent ("volatile") form of memory. Some chips store information only as long as the machine is on; these are Random Access Memory chips (RAMs). When the power is turned off, the information stored in these chips is lost.

The information to be stored permanently is held in other chips called Read Only Memory (ROMs). Information stored in ROMs is not lost when the power is turned off. Information is stored in a ROM by destroying the fusible links that make up the structure of each byte, creating the equivalent of on-and-off switches arranged according to the specifications of the program to be imprinted in the ROM.²

For all practical purposes, the information stored in a ROM cannot be changed by the user of a computer. As the name suggests, the ROM contains information that can only be read. Nothing new can be added or "written"

2. To program a ROM, program-designers use object- micro-code. This code is binary (base 2): "On/Off"; "Yes/No"; "1/0". The code can represent and control the pulse of electrical current. "The presence of such a pulse at a particular time represents the bit 1; the absence of a pulse at that time represents the bit 0." D. Fink, *Computers and the Human Mind* 135. The topography of the chip can be said to be an electro-mechanical version of the subject code since it is an array of open or closed switches at which the pulse is present or absent.

onto it. Of the 14 "works in suit," four of them are stored on ROMs.³

C. Programs: Software, Interpreters, and Languages

Of signal difficulty in this case is the elasticity of the word "program." A computer program is a set of serial instructions that directs the computer to perform certain tasks. A user does not instruct the operating center of the machine. The user writes programs that are expressed in "high level" languages resembling English. Depending on the circumstances, one or more special machine "programs" will in turn translate or "interpret" those instructions, given by the user, into a form of instruction that can be executed in the circuitry. At the level of the circuitry, programs are expressed in "low level" languages. At the very lowest level, every program is eventually reduced to "an object code," which is expressed in binary (base 2) numbers, a series of zeros and ones that represent open and closed switches within the computer's circuits.

Object code is the heart of this case. In a crude way, object code that has been etched onto the ROM architecture can be "read" by an expert with a microscope and patience. However, the object code in either its binary form or in the silicon chip form is not designed to be read by humans. It is the machine's language.

At issue in this case are fourteen "programs" expressed in object code. These programs are either imprinted on the Apple's ROMs or the Ace's EPROM or they are enscribed on floppy disks which allow for easy

3. There has been testimony that the ACE 100 contain EPROMs (Erasable Programmable Read Only Memory) rather than ROMs, but for purposes of this proceeding, the difference is inconsequential. EPROMs perform the same function as ROMs, but the information stored in them can be erased and the chip can be reprogrammed, whereas ROMs are manufactured with a fixed program.

storage and transmission to the computer's RAMs when the programs are needed.

All of these programs are "operating" programs as opposed to "application" programs. The distinction is based on the breadth of use and the function of the program. An application program has a specific task, ordinarily chosen by the user, such as to maintain records, perform certain calculations, or display graphic images. Application programs are normally written in high level languages which are designed to be easily used by the unsophisticated. An operating program, by contrast, is generally internal to the computer and is designed only to facilitate the operating of the application program.

D. Compatibility and Operating Systems

An operating system that consists of a variety of separate operating programs is in a sense a part of the machine; it provides the functioning system that allows the user to progress in an orderly fashion as he moves through the physical process of keying information into a computer. The operating system instructs the machine how to use this information and receives the solutions to the problems posed. Once in the machine, either permanently implanted as a ROM or entered from a floppy disk, an operating system is very nearly "transparent"; the user is not aware of the work and order of the work it is processing.

Because of the complex relationship between the physical elements of a computer (keyboard, screen, printer, disk drives, etc.) and the logic of the system that is both built into the CPU and added through high level languages, operating systems are critical to personal computers. Without them, every operation would require an impractical number of steps before it could be executed.

The operating system is configured to satisfy the requirements of the physical environment of the computer, especially the structure of the CPU, and to provide easy

compatibility with software written in the general market place and with peripherals made by other manufacturers. The present litigation occurs because the Apple computer has stimulated the creation of an extraordinary amount of software and peripheral hardware that is only compatible with Apple. Most of this software and peripheral hardware was designed with Apple's operating system in mind, which means it will not work, except with great difficulty or restructuring, on machines other than those with the particular configuration of operating system and CPU that is found in the Apple.

Amateurs and small businessmen who buy small computers, like Apple, but it not for its quality, although quality is not unimportant, but for the software and peripherals that are compatible with it. Franklin has "designed" a computer that is Apple-compatible. Essentially that means that the Ace was designed to run most, if not all, of the software written for Apple by hundreds of entrepreneurs and to accept the peripherals manufactured by many others. Apple contends in this suit that Franklin has "stolen" the logic and structure of their system. Franklin contends that Apple has deprived non-Apple owners of the opportunity to take advantage of the wealth of Apple-compatible material that exists in the market place. Franklin's argument is that it has created not an Apple-compatible system but rather a system compatible with Apple-compatible software which must of necessity share a great deal of the essential structure of Apple, especially of the structure of Apple's operating system.

E. The Works in Suit

The works upon which this action is based are in object code, stored in Read Only Memory (ROM) or on floppy disks.

(1) *Autostart ROM*

The Autostart program, stored in ROM, is a collection of low-level subroutines ("booting" routines) that initiate registers and other circuitry in the Apple II when the power is turned on. It also performs a variety of hardware-oriented functions during operating, so that the machine can accept keystrokes and generate character graphics for video display.

(2) *Applesoft*

The Applesoft program is Apple's version of BASIC ("Beginner's All-purpose Symbolic Instruction Code"), a higher level programming language that was originally developed at Dartmouth College. The Applesoft program is stored in ROM and is an interpreter program that processes BASIC statements, one statement at a time, and causes the computer to execute those instructions that implement the BASIC statement entered by the user.

(3) *DOS 3.3*

The DOS 3.3 program is a disk-based, operating systems program. It provides the instructions necessary to control the operation between disk drive and the computer. It controls the reading and writing of the floppy disks and includes several other routines and subroutines, for example, the read-write-track-sector ("RWTS") which puts in sequence all the data transfers. RWTS starts various subprograms that perform certain low level functions such as reading and writing data.

(4) *Floating Point BASIC*

Floating Point BASIC is a disk-based version of the Applesoft program. In some modes of the Apple II computer it is loaded into the random-access memory (RAM) of a peripheral card, known as "Language Card," and is there available for the user's programming. Floating Point BASIC is used in earlier versions of the Apple

II computer that do not have the Applesoft program in ROM.

(5) *Apple Integer BASIC*

The Apple Integer BASIC is a disk-based program and was Apple's first version of BASIC for the Apple II computer. This program implements a simpler version of Apple's Applesoft and Floating Point BASIC programs.

(6) *Hello*

The Hello program is a disk-based, operating systems program that is used in conjunction with Apple's DOS 3.3 operating system. After start-up, this program is the first program executed each time a floppy disk is "booted up." It determines how much Random Access Memory (RAM) is in the computer and which version of BASIC needs to be loaded into the computer.

(7) *Chain*

The Chain program is a disk-based operating systems program that is used in conjunction with Apple's DOS 3.3 program. The Chain program allows data to be passed between program segments, only one of which is in RAM at any given time. The Chain program preserves RAM-based data during the time another program segment is being loaded into RAM.

(8) *Copy*

The Copy program is a disk-based operating systems program that is used in conjunction with Apple's DOS 3.3 program. The Copy program is a utility program that enables the user to copy programs written in Apple Integer BASIC from one disk to another.

(9) *Copy A*

The Copy A program is a disk-based operating systems program that is used in conjunction with Apple's

DOS 3.3 program. The Copy A program is a utility program that enables the user to copy programs written in Applesoft from one disk to another.

(10) *Copy OBJO*

The Copy OBJO program contains a file of sub-routines used by the Copy and Copy A programs.

(11) *Boot 13*

The Boot 13 is a disk-based boot program that allows a user to "boot" older versions of the Apple disk operating system when the user has a 16 sector boot ROM on the Controller Card.

(12) *MasterCreate*

The MasterCreate program is a disk-based, operating systems program. When a floppy disk is first initialized, or formatted, the DOS 3.3 is placed on the disk in a form that is dependent on the amount of RAM available. The MasterCreate program replaces the DOS 3.3 on the disk with a version that is independent of the amount of RAM available.

(13) *Apple 13—Sector Boot ROM*

The Apple 13 — Sector Boot program is in a ROM located on the Disk Controller Card. This boot program initializes numerous circuits in the Controller Card and in the Apple II computer and causes other parts of the disk operating system used for 13 sector formatted disks to load.

(14) *Apple 16—Sector Boot ROM*

The Apple 16 — Sector Boot program is in a ROM located on the Disk Controller Card. This program initializes numerous circuits on the Controller Card and in the Apple II computer and causes other parts of the disk operating system used for 16 sector formatted disks to load.

III. COPYRIGHT LAW

A. The Source of Congressional Power

Congress takes its power in the area of copyright from Art. I, Sec. 8, cl. 8, of the Constitution ("To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . ."). From the start, Congress has divided the protection given to authors and inventors, established different criteria for protection, and provided different periods of protection. *Alfred Bell & Co. v. Catalda Fine Arts*, 191 F.2d 99, 100-101 (1951).

The division between the scope of copyright protection and patent protection has been recognized in Section 102 of the 1976 Copyright Law (hereinafter "the Act"). 17 U.S.C. §102. Section 102(a) restates, with new flexibility, what has been the traditional area covered by copyright: to protect through limited monopoly original works of authorship⁴ 17 U.S.C. §102(a). Section 102(b), taken together with the Act's definitions, excludes those areas which, if they are to be protected, may be only through patent law.⁵ 35 U.S.C. §1, *et seq.*

4. Copyright protection subsists, in accordance with this title in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories:

(1) literary works . . .

17 U.S.C. §102(a).

5. Pictorial, graphic, and sculptural works . . . shall include works of artistic craftsmanship insofar as their form but not their mechanical or utilitarian aspects are concerned; the design of a useful article . . . shall be considered a pictorial, graphic, or sculptural work only if . . . [its] . . . features . . . can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.

The works in suit are such that they may arguably be entitled to copyright protection or patent protection, both forms of protection or neither. I am asked to consider the motion for preliminary injunction only from the point of view of copyright infringement, yet it is clear that Section 102 must be interpreted in terms of Congress' intent with regard to both copyright and patent, at least as patent law limits the scope of the 1976 Act.⁶

5. (Cont'd)

17 U.S.C. §101.

A "useful article" is an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information . . .

17 U.S.C. §101.

In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

17 U.S.C. §102(b).

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent.

35 U.S.C. §101.

6. Plaintiff Apple, relying on *In re Yardley*, 493 F.2d 1389 (C.C.P.A. 1974, contends that the scope of the copyright is not limited by the scope of patent and that the same thing may receive both copyright and patent protection. I think that this contention is wrong and that plaintiff's reliance on *Yardley* is misplaced. The court in *Yardley*, following the Supreme Court in *Mazer v. Stein*, 347 U.S. 201 (1954), found that the 1909 Copyright Law and the 1952 Patent Law provided for overlapping protection. That analysis applied to this case and the 1976 Act begs the question. Section 102(b) explicitly removes from copyright protection "any idea, procedure, process, system, method of operation . . ." and section 101 explicitly excludes those works whose "mechanical or utilitarian" function cannot be separated from the work in which it adheres. 17 U.S.C. §§101 & 102(b). The test requires both "separability and independence from 'the utilitarian aspects of the article' " H.R. Rep. No. 1476, 94th

B. The Divided Views of Others

The problems raised here stem from the fact that there is no clear consensus on how to describe the technology employed in microcomputers. With no clarity there, the application of law to fact becomes unsure. Plaintiff Apple's claim is based on the argument that 1) a computer's operating system is a form of expression, not an idea or process; 2) whether in ROM or on floppy disk, object code or an object program, containing code, is a form of expression and a work of authorship and 3) a ROM is a tangible medium of expression, not a mechanical device. Leaving aside the question of how to describe the computer's technology and the works in suit, plaintiff argues that it was the clear intent of Congress in the 1976 Act and its 1980 Amendment to the Act to protect all computer programs, in whatever form, as if they were a species of "literary works."

Opinion has been divided on how to treat object codes, on the nature of the authorship entailed, and on how to treat ROMs generally. The National Commission on New Technological Uses of Copyright Works (hereinafter "CONTU") was divided.⁷ Judicial opinion has been

6. (Cont'd)

Cong., 2nd Sess. 55 (1976). Neither Section 102(b) nor this test was in the 1909 Copyright Act. In argument, plaintiff has not distinguished the form of the work from its utilitarian purpose. In fact, by arguing that the works in suit are each "literary works" or forms of expression, plaintiff has suggested the opposite: that their function and form are merged because each work as a whole "convey[s] information." See definition of "useful article," 17 U.S.C. §101, *supra* note 5.

7. CONTU was established in 1974 to make recommendations to Congress concerning the copyrightability of computer software and other associated programs; it submitted its Final Report in 1978. Final Report, National Commission on New Technological Uses of

mixed.⁸ See *Data Cash Systems, Inc. v. JS&A Group*,

7. (Cont'd)

Copyrighted Works (1978) (hereinafter "Final Report"). The Final Report consisted of a majority statement and separate statements by Commissioner Nimmer (concurring), Commissioner Hersey (dissenting), and Commissioner Karpatkin (dissenting in support of Commissioner Hersey).

The majority in the Final Report appear to be definite in its attitude towards the copyrightability of computer programs. "Flow charts, sources codes, and object codes are works of authorship in which copyright subsists . . ." Final Report 21. Nonetheless in another passage, the majority observed that "[c]opyright, therefore protects the program so long as it remains fixed in a tangible medium of expression but *does not protect the electro-mechanical functioning of a machine.*" *Id.* 20 (emphasis added). And again later, the majority commented that "[i]f it should prove possible to tap off these [electrical] impulses then, perhaps, the process would be all that was appropriated, and no infringement of the copyright would occur." *Id.* 22. The present case is, of course, focussed exactly on those issues the majority questioned. See *infra* notes 14-15 and accompanying text.

In its summary, CONTU made clear that it had not resolved the issues raised by programs encoded on a ROM.

It is equally important to note that these recommendations do not deal with each and every technological issue affecting the interests of copyright users and owners. Specific topics may deserve congressional attention . . . (2) protection for topography or layout of microcircuit chips.

.....

The question of copyright protection for the topography of microcircuit chips was raised by a manufacturer of these devices too late to be dealt with adequately by the Commission.

Id. 79. See *infra* note 9 for discussion of subsequent congressional investigation of copyright protection for chip topography.

In his concurrence, Commissioner Nimmer suggested that CONTU had gone too far in its views of software copyright protection by extending protection to areas reserved for patent law or areas deliberately left unprotected. *Id.* 26.

[I]t may prove desirable to limit copyright protection for software to those computer programs which produce works which themselves qualify for copyright protection. . . . A program de-

Inc., 480 F. Supp. 1063 (N.D. Ill. 1979), *aff'd on other*

7. (Cont'd)

signed for a computer game would be copyrightable because the output would itself constitute an audiovisual work. On the other hand, programs which control the heating and air-conditioning in a building, or which determine the flow of fuel in an engine, or which control traffic signals would not be eligible for copyright because their operations do not result in copyrightable works. . . .

Id. 27. *See infra* text accompanying notes 18-19.

In his dissent, Commissioner Hersey noted the machine-control character of a computer program. He contended it was neither a "writing" nor a "literary work," since it had no communicative function. *Id.* 27-30. "Communication as we understood it ceases, and . . . 'behavior' — an opening and closing of electronic gates — sets in." *Id.* 37. *See infra* note 14.

8. *Data Cash* is perhaps the most definitive trial court opinion holding that object code in ROM is not copyright protected. Its analysis of the function of object code is persuasive. However, its holding is somewhat weakened by the affirming opinion of the Court of Appeals since it may be read as suggesting that ROMs may be copyright protected if the copyright formalities have been satisfied. *See infra* text accompanying note 18.

In two other cases, a trial court, considering allegations of restraint of trade in the computer field, observed that copyright does not prevent others from copying the material embodiment of the source program that is found in the object program. *In re Data General Corp. Antitrust Litigation*, 490 F. Supp. 1089, 1113 (N.D. Calif. 1980); *In re Data General Corp. Antitrust Litigation*, 529 F. Supp. 801, 816 (N.D. Calif. 1981). In a somewhat similar question to that raised here, the court in *Synercom Technology, Inc. v. University Computing Co.*, 462 F. Supp. 1003 (N.D. Tex. 1978) held that computer input formats were not copyright protected. The court said that "the litmus seems to be whether the material proffered for copyright undertakes to express." *Id.* 1011 "Thus the issue is whether [defendant] copied expressed ideas or their expression." *Id.* 1012.

Tandy Corp. represents the opposite judicial point of view. The facts in *Tandy Corp.* are similar to this case, alleged infringement of ROM object program that consisted of the computer's operating system. Disagreeing with the decision in *Data Cash*, the court held that the program was a work of authorship and that a ROM is a

Cal. 1981).⁹ The legislative history is unclear.¹⁰ *Commengrounds*, 628 F.2d 1038 (7th Cir. 1980); *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171 (N.D.

8. (Cont'd)

tangible medium of expression under the Copyright Act. See *infra* text accompanying note 16. More recently in *GCA Corp. v. Chance, et al.* Civ. No. C-82-1062 (N.D. Calif. July 12, 1982), the court followed *Tandy*, holding that object code in a ROM was copyright protected since the source code was copyrighted. However, the court's rather terse analysis provides little guidance.

In the last year, a number of courts have held that a ROM-based object program used to create visual displays in arcade games is properly copyright protected. *Midway MFG. v. Artic International, Inc.*, F. Supp. , 211 U.S.P.Q. 1152 (N.D. Ill. 1982). See *infra* text accompanying notes 20-21. *Atari, Inc. v. North American Phillips Consumer Electronics Corp.*, No. 81-2920 (7th Cir. March 2, 1982); *Stern Electronics, Inc. v. Kaufman*, No. 81-7411 (2d Cir. Jan. 20, 1982); *Atari, Inc. v. Amusement World, Inc.*, No. 81-803 (D. Md. Nov. 27, 1981); *Midway Manufacturing Co. v. Drikschneider*, No. 81-0-243 (D. Neb. July 15, 1981); *Williams Electronics, Inc. v. Artic International, Inc.*, Civ. No. 81-1852 (D. N.J. June 24, 1981); *Cinematronics, Inc. v. K. Noma Enterprise Co.*, Civ. No. 81-439 (D. Ariz. May 22, 1981).

9. Congressional intent regarding the copyrightability of object codes and ROMs is not clear. The 1976 Act left intact the case law developed under the 1909 Act. 17 U.S.C. §117 (1976). See H.R. Rep. 116. The 1980 Amendment to Title 17, P.L. 96-517, incorporated a definition of computer programs, 17 U.S.C. §101 as amended, and excluded from copyright infringement some forms of copying and adaptation, 17 U.S.C. §117 as amended. While commentators have been willing to interpret these amendments as extending absolutely copyright protection to software, see Stern, *Another Look at Copyright Protection of Software* at 8 & n.7, the amendments and subsequent legislative discussions suggest a restrictive reading.

In April 1979, Congress held hearings to consider a bill amending the 1976 Act in order to provide copyright protection for imprinted design patterns on semiconductor chips. *Copyright Protection for Imprinted Design Patterns on Semiconductor Chips, 1979: Hearing on H.R. 1007 Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judi-*

9. (Cont'd)

ciary, 96th Cong., 1st Sess. (1979) (hereinafter "Hearing on Chips") (not reported out of committee). The question facing the committee was whether chips or integrated circuits are appropriately protected and, if not protected, whether copyright protection should be extended to them through legislation. "In the judgment and practice of the Copyright Office, the configuration of the chip is not [copyrightable] — if you were to depict these patterns on an earlier piece of paper we believe that piece of paper and the drawing is copyrighted; but there are limitations on the rights extended thereby." Hearing on Chips 21 (statement by Jon Baumgarten, at that time General Counsel for the U.S. Copyright Office). "[I]t's a question of whether the drawing and the chip are the same thing." *Id.* 21. See *infra* note 10.

A recent House staff report indicated that the debate continues. "The current methods available for protecting software are patents, copyright, and trade secret law. However the determination of the best alternative is still under debate. The issue of software protection reflects the problems associated with applying old legal tools to new technologies." Staff Report of the House Comm. on Science and Technology, Survey of Science and Technology Issues—Present and Future, 97th Cong., 1st Sess. 69 (1981). "The underlying issue is whether new forms of statutory protection are necessary to insure the continued development of computer software. Congress may wish to consider whether current efforts such as those to amend the Copyright Act of 1976, are sufficient to protect new technologies or whether additional measures should be undertaken. Congress may wish to closely monitor decisions by the Supreme Court in this area in order to assess the need for legislative action." *Id.* 70

10. Litigation reflects conflict. The recent increase generally in litigation of the kind represented by this case reflects an increased conflict in the applicability of the copyright law to ROMs and object codes. See *supra* note 8. See also *Getting Tough on Software Theft*, Business Week, 28-29 (May 31, 1982). As one might suspect by the increased litigation, members of the industry appear not to agree on whether the current law covers works like those in suit. Testimony at the Hearing on Chips reveals the division, see *supra* note 9: testimony of L.J. Sevin, president, Mostek Corp. in favor, Hearing on Chips 22-31; testimony of Andrew S. Grove, president, Intel Corp., in favor, *Id.* 31-41; testimony of Professor James B. Angell, Stanford University, in favor, *Id.* 47-50; testimony of John Finch, vice president, National Semiconductor Corp., against, *Id.* 50-55; testimony

tators have arrived at different conclusions.¹¹

Apple's position is not implausible. The program of an operating system is, quite conceivably, the expression of an original work that is fixed in the tangible medium of the written program or fixed in the medium that stores it, whether it be disk or ROM. Object code may be said to be the language used by a programmer in the same way Hemingway may be said to have used English to write *For Whom the Bell Tolls*. A ROM may be considered a "tangible medium of expression," fixing an original work much as a book, record or motion picture film fix a literary work, a musical work or a motion picture.¹² 17 U.S.C. §102(a)

10. (Cont'd)

of James M. Early, director, Fairchild Camera & Instrument Corp., against, *Id.* 35-62. The arguments are interesting and go to the heart of policy questions related to the protection and promotion of this technology. But it is sufficient to say that among this group there was agreement that the copyright law does not clearly protect work like those in suit that are ROM-based.

11. See generally ABA Subcomm. on Copyright Protection for Video Displays, Discussion, *Reports to Annual Meeting* 162 (1982); L. Gasaway & M. Murphy, *Legal Protection for Computer Programs* (1980); Rose, *Intellectual Property Rights*, 9 Pepperdine L. Rev. 547 (1982); Stern, *Roms in Search of a Remedy*, 1 Computer Law Reporter (1982); Schmidt, *Legal Proprietary Interests in Computer Programs*, 21 Jurimetrics J. 345 (1981); Davidson & Russo, *Protection of Computer Software After the Copyright Act of 1980* in *Computer Programs & Data Bases* 119 (1981); Keplinger, *Protection of Computer Software*, 30 Emory L.J. 483 (1981); Stern, *Another Look at Copyright Protection of Software; Did the 1980 Act do Anything for Object Code?*, 3 Computer/Law J. 1 (1981); Iskrent, *The Impact of the Multiple Forms of Computer Programs on Their Adequate Protection by Copyright*, 18 Copyright L. Symp. (AS-CAP) 92 (1968).

12. Under this definition "copies" and "phonorecords" together will comprise all of the material objects in which copyrightable works are capable of being fixed. The definitions of these terms in section 101 [17 U.S.C. §101], together with their usage in section 102 [17 U.S.C. §102] and throughout the bill, reflect a fundamental distinc-

C. Case Law and Copyright Law

All the analysis of the facts in this case depends upon the meaning given to the key words of art used in the Act and defined by the courts. They are: "creativity and originality," "expression and ideas," and "works of authorship".

(1) "Creativity and Originality"

From the outset, it is important to recognize that the issues raised here cannot be resolved on the grounds of creativity—the presence or absence of it. Copyright law does not require that the author or artist be exceptionally creative or original. In fact, "a modicum of creativity may suffice for a work to be protected." *Universal Athletic Sales Co. v. Salkeld*, 511 F.2d 904, 908 (3rd Cir.), cert. denied 423 U.S. 863 (1975). Alternatively, extreme creativity does not in itself make an argument for copyrightability. At issue is only whether the works in suit are the "fixed" expression of an author's "original work."¹³

12. (Cont'd)

tion between the "original work" which is the product of "authorship" and the multitude of material objects in which it can be embodied. Thus, in the sense of the bill, a "book" is not a work of authorship, but is a particular kind of "copy." Instead, the author may write a "literary work," which in turn can be embodied in a wide range of "copies" and "phonorecords," including books, periodicals, computer punch cards, microfilm, tape recordings, and so forth. . . . H.R. Rep. 53, Section 101, 17 U.S.C., defines "copies" as "material objects . . . in which a work is fixed by any method now known or later developed . . . from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." (emphasis added). See *infra* note 21 and accompanying text.

13. A work is "fixed" in a tangible medium of expression when its embodiment in a copy or phonorecord . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration.

17 U.S.C. §101.

Nevertheless, "[i]t is possible to have an 'original work of authorship' without having a 'copy' embodying it, and it is also possible to have a 'copy' embodying something that does not qualify as an 'original work of authorship.'" H.R. Rep. 53. Although there can be a variety of different material embodiments of the work, there can be only one original work.

In the case of computer programs, like those in suit, one must be able to identify the original work that has been embodied. It is not clear whether the program-designer's idea of the operating system program, the source program, or the ROM is the "original work of authorship." It is not surprising that this should be hard to determine, because at each stage major transformations in the structure of the "program" take place. From plaintiff's point of view, the best argument is that the idea of the operating system is the "original work" and that all that follows are copies. The counter-argument that plaintiff must respond to is a technical one that goes to the heart of the technology: in the case of the programs on ROM did the programmer-designer imagine the architectural structure of the ROM, the overlay of micro-switches that would be most economical and efficient for the system, or did he envision the flow chart of operations which the program would perform? If the former, the programmer may be said to have been an engineer designing a utilitarian aspect of the machine. If the latter, the programmer may not be said to have designed the architecture of the chip. *See infra* note 14 and accompanying text.

Apple's argument that its programmers displayed virtuoso skill, if not genius, in developing the programs and the ROMs is not dispositive, even though I tend to agree that the evidence demonstrates their extraordinary skill. In the context of the Copyright Act, an "original" work need not be with a work of genius.

(2) "Expression and Ideas"

The distinction between ideas and expression, while not always self-evident, is crucial. An "expression" may, under some circumstances, be said to be the tangible, fixed form of an idea where the expression's purpose is "to convey information." 17 U.S.C. §101. Such a statutory reading is consistent with both the Act's legislative history, H.R. Rep. 52-53, and case law. Any tangible form can be treated as the constitutional equivalent of "writings," *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884), which are the classic, permanent medium for conveying information and transmitting ideas.

Enlarged as the concept of "writings" now is, it retains its original meaning: to express and communicate. *Baker v. Selden*, 101 U.S. 99 (1879), made the first, and still most notable, statement of this proposition. "The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. *The object of one is explanation; the object of the other is use.* *Id.* 105 (an accounting form held not copyrightable, but the explanation of the form was) (emphasis added).

Admittedly, the holding in *Baker* has been somewhat limited after *Mazer v. Stein*, see *supra* note 6, see also 1 Nimmer on Copyright, §2.18[C], but the underlying perception still retains its vitality. The balance *Baker* presented between "explanation" and "use" is the balance between the material meant to be protected by the copyright clause of the Constitution and that meant to be protected by the patent clause. *Accord Taylor Instrument Companies v. Fawley-Brost Co.*, 139 F.2d 98, 99 (10th Cir. 1943). Following *Baker*, the court in *Taylor* drew the distinction between copyright and patent as between that which "teaches . . . [and] explains the use of the art" and that which "is an essential element of the machine." *Id.* 100. The vitality of *Baker* is found in the distinctions

drawn between Section 102(a) and Section 102(b) in the Act, between that work "fixed in a tangible medium of expression" and that which has its primary function the exploitation or use of an idea. See H.R. Rep. 56-57.

It is not clear in this case that an operating system in binary code or one represented either in a ROM or by micro-switches are "explanations" under the *Baker-Taylor* doctrine. Equally, it is not clear that object code, which was not designed to be "read" by a human reader and can only be read by an expert with a microscope and patience, is a language of description. It cannot teach. It can be used to control the operation of the computer. For these reasons, it may be more accurate to say that operating systems are an essential element of the machine, if not an essential part of the machine that makes it work. Similarly, it may be more accurate to say that object code in its binary form or chip form is a useful version of the machine's electrical pulse.

(3) "Works of Authorship"

Copyright protection subsists only in original works of authorship. 17 U.S.C. §102(a). Working directly in object code, the programmer appears to think in the manner of a mathematician or engineer, who solves explicit problems that have defined parameters.¹⁴ While it

14. At the level of the microcode, physical and abstract meet. The microcode controls the actual circuits. . . . Indeed, the physical machine responds only to microcode. It was microcode, at bottom, that caused [the computer] to translate [the division symbol] into microcode. In this sense, the computer chases its tail.

. . . Writing microcode, however, is no simple task. The code is by definition intricate. To make the machine execute just one of its two hundred basic instructions, the coder usually has to *plan the passage of hundreds of signals through hundreds of gates*. Limited storage space forces the coder to economize—to make one microinstruction accomplish more than one task, for example. At the same time, though, the coder must take care

is tempting to treat all computer programs as "literary works," such an analysis may only serve to confuse the meaning of authorship.

The process of constructing a chip is "not so much a work of authorship as the product of engineering knowledge (often skillful and sometimes creative) focused on obtaining a desired function or output. Accordingly, . . . the resulting integrated circuit represent[s] the function desired in the circuit rather than an effort of the type exerted by authors." Hearing on Chips 59 (statement of James Early on behalf of Fairchild Camera & Instrument Corp.). See *supra* note 9. Hence, it may be more apt to describe an encoded ROM as a pictorial three-dimensional object than as a literary work and to discount the notion of authorship associated with literary or creative works.

Programmers need not write in object code and, most do not, because the computer can make its own "translation" of object code from an original source code.¹⁵ Be-

14. (Cont'd)

that one microinstruction does not foul up the performance of another.

. . . Writing microcode is like nothing else in my life. For days there's nothing coming out. . . . [F]inally I get into a mental state where I'm a *microcode-writing machine*. . . . You have to understand the program thoroughly and you have to have thought of all the myriad ways in which you can put your microverbs together. You have a hundred L-shaped blocks to build a building. You take all the pieces, put them together, pull them apart, put them together. After a while, you're like a kid on a jungle gym. There are all these constructs in your mind and you can swing from one to the other with ease.

T. Kidder, *The Soul of a New Machine*, 97-102 (1981) (quoting program designer) (emphasis added).

15. Programs written in source codes are generally conceded to be copyrightable. See Keplinger, *Protection of Computer Software* 510; Stern, *Another Look at Copyright Protection of Software* 4; Synercom at 1013n.5.

cause this is so, it is argued that the "automatic" translation of source to object code establishes a predictable one-to-one relationship between the two codes that preserves the programmer's original force of authorship. See *GCA Corp. v. Chance, et al.*, Civ. No. C-82-1062 (N.D. Calif. July 19, 1982). But see Stern, *Another Look at Copyright Protection of Software*, 3 Computer/Law J. 1, 3 (1981).

The reasoning that finds object code a derivative work of source code and thus copyrightable, 17 U.S.C. §103(a), follows somewhat Judge Hand's in *Reiss v. National Quotation Bureau, Inc.*, 276 Fed. 717 (S.D.N.Y. 1921) (meaningless code words were copyright protected). See CONTU, Final Report 14-15. According to this reasoning, the programmer meets the standard of authorship when he has created expressions even if the computer is to supply its own "meaning" and its own use. "I can see no reason why [the code] words should not be [writings] because they communicate nothing. They may have their uses for all that, aesthetic or practical, and they may be the production of high ingenuity, or even genius." *Reiss*, 276 Fed. at 719. See Iskrant, *The Impact of Multiple Forms of Computer Programs* 118.

15. (Cont'd)

Source codes are mnemonic systems of abbreviating machine instructions. "Typical abbreviations might be HLT for "halt," STA for "store in register A," BR + for "branch if the register is plus," XZJ for "jump if index register is zero." Iskrant, *The Impact of the Multiple Forms of Computer Programs*, 18 Copyright L. Symp. (ASCAP) 92, 105 (1968). Source programs are placed in the computer through the keyboard, by disk, tape or cards and, then, are converted by the machine into an intermediate assembly language and finally into object code. See T. Kidder, *The Soul of a New Machine* 97-99. Although programmers normally write in source code because it can easily be read and corrected, programmers may write directly in object code when it is necessary to have direct control over the architecture of the ROM. See *supra* note 14.

D. The Rom as Three-Dimensional, Pictorial, Graphic or Sculptural Work

It is precisely the problem of description that makes this problem so baffling. The list of comparisons, thanks to ingenious counsel, is a long one; equally good analogies lead to contradicting results.

ROMs which have interiors etched or designed to incorporate object code in their physical shape may be likened to three-dimensional works of art, *Mazer v. Stein*, 347 U.S. at 210-215, and therefore be entitled to copyright protection. See *supra* note 5.

In *Taney Corp. v. Personal Micro Computers, Inc.*, the court viewed an encoded ROM as being somewhat akin to a three-dimensional object that may not be copied by a non-copyright holder without infringing on the copyright. *Id.* 173, 175. In this light, a ROM is taken to be a self-contained and clearly fixed form of expression since "duplication of a chip is not the use of a copyrighted program 'in conjunction with' a computer; it is simply the copying of a chip." *Id.* 175. This analysis contradicts somewhat the view of the CONTU majority that a "tapped off" ROM may not be protected from copyright infringement.¹⁶

On the other hand, ROMs encoded with an object program may be compared to a physical structure with an essentially useful purpose or function, like that of a bridge, *Muller v. Triborough Bridge Authority*, 43 F. Supp. 298, 299 (S.D.N.Y. 1942), or to an architectural work like a house, *De Silva Construction Corp. v. Herrald*, 213 F. Supp. 184, 195-196 (M.D. Fla. 1952). As such, an object program encoded on a ROM would not be entitled to copyright protection.¹⁷ In *De Silva Construction Corp.*,

16. See *supra* note 7. See also Stern, *Roms in Search of a Remedy*, 1 Computer Law Rep. (1982).

17. See also *Data Cash*, 480 F. Supp. at 1068.

the court went further: the construction of a building by the copyright holder does not amount to publication of the plans. *Id.* 196. Plans are different from the building based upon the plans.

It is possible that this is the situation in the current dispute: neither the Apple nor Franklin ROM is a copy of an "original work" since the plan upon which each is based may be considered to exist separately from the chip that is ultimately constructed. Absent copying, there is no infringement of copyright. *Mazer v. Stein*, 347 U.S. at 218.

The issue here is, of course, whether the ROM structured with code is a new entity created through the use of the plans, *i.e.*, the program, or whether it incorporates the plan or program in its own structure. If the former, under the reasoning of *De Silva Construction Corp.*, it would not be entitled to copyright protection. If the latter, it might be entitled to protection. But even here, the protection might only extend to the ROM with its interior. It would not cover the object code by itself.

E. The Expression of a Utilitarian Function

Defendants argue that the programmed ROM is an object that merges idea and expression to the point they are indistinguishable, *see Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971), or merges its utilitarian function and expressive purpose so that they too are inseparable, *see Esquire, Inc. v. Ringer*, 591 F.2d 796, 798-800 (D.C. Cir. 1978), *cert. denied* 440 U.S. 908 (1979). It is this inseparability of function and purpose that the court in *Data Cash* found, where it was held that the ROM at issue was not copyrightable.¹⁸

18. *See supra* note 8.

The copyright protection available to a ROM is similarly restricted if the ROM is defined as a mechanical device. "In its object phase, the computer program is a mechanical device which is engaged in the computer to become an essential part of the mechanical process." Keplinger, *Computer Intellectual Property Claims*, 1977 Wash. L.Q. 461, 464 (quoted with approval in *Data Cash*, 480 F. Supp. at 1067n.4(2)). See also Stern, *Another Look at Copyright Protection*, 3 Computer/Law J. at 2. See generally D. Fink, *Computers and the Human Mind* at 131-177. If a ROM is found to be a mechanical device, it loses the protection reserved for writings and expression under copyright. 1 Nimmer on Copyright §2.18[4] (1979) (quoted with approval in *Data Cash*, 480 F. Supp. at 1067n.4(2)). The argument that a ROM is a mechanical device has been made:

Descriptions and printed instructions tell human beings how to use material or machinery to produce desired results. In the case of computer programs [on the other hand], *the instructions themselves eventually become an essential part of the machinery that produces the results*. They become (in chip or hardware form) a permanent part of the actual machinery. . . . This is a device capable of commanding a series of impulses which open and close the electronic gates of the computer in such order as to produce the desired result.

CONTU, Final Report 28 (Commissioner Hersey dissenting) (emphasis in original).¹⁹ Commissioner Hersey observes that the appropriate analogy to describe a program within the computer is that of a "cam" which, "like a mature computer program, is the objectification of a series of instructions." *Id.* 29-30. While either the cam or

19. See *supra* note 7.

the machine-language or binary code may be read by an expert, its purpose is not to serve as a form of human communication. As he wrote, echoing the *Baker-Taylor* doctrine, "[p]rinted instructions explain *how* to do something; programs are *able* to do it." *Id.* 28 (emphasis in original).

The argument made by Commissioner Hersey and by defendant Franklin that the ROM is a mechanical device is an argument for its patentability. *See supra* note 6. A ROM may be characterized as firmware, a combination of software and hardware that operates together to control a computer. Certain firmware is protectable under patent law. *Diamond v. Bradley*, 450 U.S. 381 (1981) (per curiam), *aff'g by an equally divided court In re Bradley*, 600 F.2d 807 (C.C.P.A. 1979).

The argument for the patentability of the various operating systems in suit may also rest on the view that they are manifestations and implementations of the "useful arts," as the term is understood in patent law, directed to producing a beneficial result. *Diamond v. Diehr*, 450 U.S. 175, 182-183 & n.7 (1981). A computer's operating system is, by this view, the means by which a computer is "transformed and reduced to a different state or thing," *Cochrane v. Deener*, 94 U.S. 780, 788 (1877); *accord Diamond v. Diehr*, 450 U.S. at 183, although it would have to be shown that its transformed state is specialized and distinct from that of other machines of the same class. I do not, of course, conclude that Apple will be able to satisfy the rather rigorous tests of the patent law.

F. The Test of Communication for Copyright

The *Baker-Taylor* doctrine suggests that the scope of copyright is limited to material that can claim an underlying expressive or communicative purpose. It is a test not easily applied because it raises questions at the very

heart of all discussions on the purpose and meaning of language. It is a test not easily satisfied by works, like those in this suit, that are in the form of binary code and electro-mechanical chips.

Perhaps it is sufficient to say in the context of the present motion for preliminary injunction that no matter how indirect or exotic the form of expression or the medium used, the question must be: is the expression directed to a human audience?

A recent case like *Midway Mfg. Co. v. Artic International, Inc.*, F. Supp. , 211 U.S.P.Q. 1152 (N.D. Ill. 1982) (ROM containing the code for a visual display held copyrightable) reveals the complexity of the question presented by the present case and the fragile but important distinctions that must be made when considering the copyrightability of object codes.²⁰ In *Midway*, the object code was the underlying system used by the computer to produce a series of visual images that were meant to be perceived by an arcade game player.

Restricted to these facts, it is not illogical to treat the object code as an "expression . . . which can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."²¹ 17

20. See *supra* note 8.

21. It does not distort this phrase to understand it as requiring that the work be perceptible to a human audience and not merely perceptible to a machine. Its plain meaning suggests that machine aid is recognized in this section only if it is capable of aiding human perception and supporting human communication. A similar construction is used in Section 401, "notice of copyright: Visually perceptible copies." It would indeed be a curious interpretation of Section 401 if it were to be read as referring to anything but a copy that can be humanly perceived.

. . . [A] notice of copyright as provided by this section shall be placed on all publicly distributed copies from which the work

U.S.C. §102(a). The "original work" is the visual display that has been fixed, presumably, first in source code and later in object code. No matter how it has been fixed, its purpose from the outset was to generate an image that could be *perceived* and its goal was to attract and engage a human audience. Such purposes and goals satisfy our conventional expectations of expression.

If the concept of "language" means anything, it means an ability to create human interaction. It is the fixed expression of this that the copyright law protects, and only this. To go beyond the bounds of this protection would be ultimately to provide copyright protection to the programs created by a computer to run other computers. With that, we step into the world of Gulliver where horses are "human" because they speak a language that sounds remarkably like the one humans use. It is an intriguing analogy but false. The logic of the court in *Midway* does not resolve the problem raised in this case.

21. (Cont'd)

can be visually perceived, either directly or with the aid of a machine or device.

17 U.S.C. §401. (emphasis added). *See also* Regulations, Office of Copyright.

[T]he Copyright Office will consider registration for a "book" . . . if . . .

(2) The program has been published, with the required copyright notice; that is, "*copies*" (i.e., *reproductions of the program in a form perceptible or capable of being made perceptible to the human eye*) bearing the notice have been distributed or made available to the public.

Office of the Register of Copyrights, Announcement SML-47 (May 1964); Copyright Office Circular 310 (Jan. 1965).

IV. CONCLUSIONS

The requirements for issuing a preliminary injunction are well known. Plaintiff must show:

1. A reasonable probability of success on the merits;
2. Irreparable injury to the plaintiff that exceeds any injury to the enjoined defendant;
3. The improbability of harm to other interested persons; and,
4. A public interest that would be furthered.

Delaware River Port Authority v. Transamerican Trailer Transport, Inc., 501 F.2d 917, 919-920 (3rd Cir. 1974).

There is limited evidence as to the last two showings, but, as the foregoing memorandum should make clear, I have considerable doubt about Apple's likelihood of success on the merits. While Apple's arguments are strong, I do not believe that it has shown a reasonable *probability* of success. It is also clear that Apple is better suited to withstand whatever injury it might sustain during litigation than is Franklin to withstand the effects of a preliminary injunction. While I am not prepared to find that the injunction sought by Apple would force Franklin out of business, it would certainly have a devastating effect.

Apple having failed to make the necessary showing, its motion will be denied. An appropriate order will be entered.

CLARENCE C. NEWCOMER, J.

IN THE UNITED STATES DISTRICT COURT
FOR THE
EASTERN DISTRICT OF PENNSYLVANIA

CIVIL ACTION

NO. 82-2107

APPLE COMPUTER, INC.
vs.
FRANKLIN COMPUTER CORP.

ORDER

AND NOW, this 30th day of July, 1982, consistent with a memorandum filed today, it is hereby Ordered that plaintiff's Motion for a Preliminary Injunction is DENIED.

AND IT IS SO ORDERED.

CLARENCE C. NEWCOMER, J.

IN THE UNITED STATES DISTRICT COURT
FOR THE
EASTERN DISTRICT OF PENNSYLVANIA

CIVIL ACTION

NO. 82-2107

APPLE COMPUTER, INC.

vs.

FRANKLIN COMPUTER CORP.

M E M O R A N D U M

Newcomer, J.

September 14, 1982.

Plaintiff moves for reconsideration of my Order of July 31, 1982. Plaintiff's motion is based on the recent decision of the Court of Appeals in *Williams Electronics, Inc. v. Artic International, Inc.*, No. 81-2407 (3rd Cir. Aug. 2, 1982).

Having reviewed the *Williams* decision I have concluded that it does not address directly the issues raised in this case. Neither does the reasoning set forth in Judge Sloviter's opinion suggest a conclusion here. In my view, my discussion of *Midway Manufacturing Co. v. Artic International, Inc.*, No. 80C5863 (N.D. Ill. March 10, 1982) is applicable to *Williams*. An appropriate order will be entered.

CLARENCE C. NEWCOMER, J.

IN THE UNITED STATES DISTRICT COURT
FOR THE
EASTERN DISTRICT OF PENNSYLVANIA

CIVIL ACTION

NO. 82-2107

APPLE COMPUTER, INC.

vs.

FRANKLIN COMPUTER CORP.

ORDER

AND NOW, this 14th day of September, 1982, it is hereby Ordered that Plaintiff's Motion for Reconsideration is DENIED.

AND IT IS SO ORDERED.

CLARENCE C. NEWCOMER, J.

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 82-1582

APPLE COMPUTER, INC.,

Appellant

vs.

FRANKLIN COMPUTER CORPORATION

(D.C. Civil No. 82-2107)

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

Present: HUNTER, HIGGINBOTHAM and SLOVITER,
Circuit Judges

JUDGMENT

This cause came on to be heard on the record from the United States District Court for the Eastern District of Pennsylvania and was argued by counsel March 17, 1983.

On consideration whereof, it is now here ordered and adjudged by this Court that the judgment of the said District Court entered September 15, 1982, be, and the same is hereby reversed. Costs taxed against appellee.

ATTEST:

Chief Deputy Clerk

August 30, 1983

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 82-1582

APPLE COMPUTER, INC.,

Appellant

v.

FRANKLIN COMPUTER CORPORATION,

Appellee

SUR PETITION FOR REHEARING

Present: ALDISERT, GIBBONS, HUNTER, WEIS, GARTH,
HIGGINBOTHAM, SLOVITER, BECKER, *Circuit*
Judges

The petition for rehearing filed by

Appellee, Franklin Computer Corporation,

in the above-entitled case having been submitted to the judges who participated in the decision of this court and to all the other available circuit judges of the circuit in regular active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is denied.

BY THE COURT,

Circuit Judge

Dated: September 23, 1983

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 82-1582

APPLE COMPUTER, INC.,

Appellant

vs.

FRANKLIN COMPUTER CORPORATION

Pursuant to Rule 41(b) of the Federal Rules of Appellate Procedure, it is O R D E R E D that issuance of the certified judgment in lieu of formal mandate in the above cause be, and it is hereby stayed until October 30, 1983. No further extensions will be granted.

Circuit Judge

Dated: September 30, 1983

**CONSTITUTIONAL AND STATUTORY
PROVISIONS INVOLVED****U.S. Const. art. I, § 8, cl. 8**

Section 8, Clause 8. Patents and copyrights

To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

**Copyright Act, 17 U.S.C.A. § 101, Pub. L. No. 96-517, § 10,
94 Stat. 3028 (1980) (Software Copyright Act of 1980)**

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."

Copyright Act, 17 U.S.C. § 102(b) (Supp. III 1979)

§ 102 Subject matter of copyright: In general

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories:

- (1) literary works;
- (2) musical works, including any accompanying words;
- (3) dramatic works, including any accompanying music;

- (4) pantomimes and choreographic works;
- (5) pictorial, graphic, and sculptural works;
- (6) motion pictures and other audiovisual works; and
- (7) sound recordings.

(b) In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

No. 83-704

Office - Supreme Court, U.S.

FILED

NOV 23 1983

IN THE

Supreme Court of the United States

ROBERT L. STEVAS,
CLERK

OCTOBER TERM, 1983

FRANKLIN COMPUTER CORPORATION,
Petitioner,
vs.

APPLE COMPUTER, INC.,
Respondent.

**BRIEF FOR RESPONDENT IN OPPOSITION TO
PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT
OF APPEALS FOR THE THIRD CIRCUIT**

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November 23, 1983

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Restatement of Questions Presented

Petitioner's (Franklin's) statement of the questions presented incorporates factual assertions contrary to the facts of record (as explained in the restatement of the case, *infra*). Properly stated, the sole issue presented is whether this Court should review the unanimous decision of the United States Court of Appeals for the Third Circuit when that decision:

(1) is in accord with every other apposite decision (save only the district court decision which the Third Circuit reversed) which has ruled on the copyrightability of computer programs like those here in issue (referred to as "operating system programs") under the Software Copyright Act of 1980, amending the Copyright Act of 1976;

(2) is in accord with the well-established rule in the other circuits awarding preliminary injunctive relief in copyright cases upon a *prima facie* showing of infringement of a valid copyright, without further proof of irreparable injury, and, furthermore, also based its reversal on a showing of actual irreparable harm resulting from Franklin's blatant, wholesale copying in this case; and

(3) remanded the case to the district court to consider certain defenses, and to consider the appropriateness of adjudicating certain other defenses, asserted by Franklin but not yet ruled upon by either court.

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<i>United Feature Syndicate, Inc. v. Cornwell Indus- tries</i> , 2 Copyright L. Rep. (CCH) (Copyright L. Dec.) ¶ 25,509 (C.D. Cal. Dec. 9, 1981)	18 n.16
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<i>Universal City Studios, Inc. v. J.A.R. Sales, Inc.</i> , 216 U.S.P.Q. 679 (C.D. Cal. 1982)	18 n.16
<i>Universal City Studios, Inc. v. Kamar Industries</i> , 1981-83 Copyright L. Dec. ¶ 25,452 (S.D. Tex. 1982)	17 n.16
<i>Wainwright Securities Inc. v. Wall Street Tran- script Corp.</i> , 558 F.2d 91 (2d Cir. 1977), <i>cert. denied</i> , 434 U.S. 1014 (1978)	17 n.16

Legislative Authorities:

Pub. L. No. 94-553, 90 Stat. 2541 (1976) (Copy- right Act of 1976)	<i>passim</i>
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	<i>Page(s)</i>
Pub. L. No. 96-517, § 10, 94 Stat. 3028 (1980) (Software Copyright Act of 1980)	<i>passim</i>
17 U.S.C. § 101	4, 12, 14 n.12
17 U.S.C. § 102	3, 11 & n.9, 12, 15
H.R. Rep. No. 1476, 94th Cong., 2d Sess., <i>reprinted</i> in 1976 U.S. Code Cong. & Ad. News 5659	11 n.9, 15
H.R. Rep. No. 1307, 96th Cong., 2d Sess., <i>reprinted</i> in 1980 U.S. Code Cong. & Ad. News 6460	11
Final Report of the National Commission on New Technological Uses of Copyrighted Works (1979)	<i>passim</i>

Other Authorities:

Brooks, "Interrelationship of Copyright and Trade Secret," <i>Software Protection: Current Develop- ments in Copyright and Patent and Their Re- lationship to Trade Secret</i> 309 (1982)	15
P. Calingaert, <i>Operating System Elements</i> (1982)	2 n.1
L. Frenzel, <i>Getting Acquainted with Microcom- puters</i> (1978)	2 n.1
Keplinger, <i>Computer Software — Its Nature and Its Protection</i> , 30 Emory L.J. 483 (1981)	4 n.3
Note, <i>Copyright Protection of Computer Program Object Code</i> , 96 Harv. L. Rev. 1723 (1983)	9 n.7, 10
Business Week, Mar. 8, 1982	5
inCider, Mar. 1983	5
N.Y. Times, Oct. 23, 1983	7 n.6

No. 83-704

IN THE
Supreme Court of the United States

OCTOBER TERM, 1983

FRANKLIN COMPUTER CORPORATION,
Petitioner,

vs.

APPLE COMPUTER, INC.,
Respondent.

**BRIEF FOR RESPONDENT IN OPPOSITION TO
PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT
OF APPEALS FOR THE THIRD CIRCUIT**

Respondent Apple Computer, Inc. respectfully prays that this Court deny the petition for a writ of certiorari to review the decision of the United States Court of Appeals for the Third Circuit (reported at 714 F.2d 1240), entered August 30, 1983.

Restatement of the Case

First, Franklin's statement of the case is misleading in its postulation of a purported "undisputed distinction" [Petition ("Pet.") at 3] between operating system programs and application programs. In all ways relevant to copy-rightability, those computer programs classified as operating system programs cannot fairly be distinguished from those classified as application programs.

Operating system programs, the same as application programs, are: (i) writings which exist apart from the computer, reflecting the highly creative endeavors of skilled programmers (usually writing, for the sake of convenience, in a source code alphanumeric high level or assembly language); (ii) translatable to many other languages and eventually translated into object code; (iii) encoded on or in one or more storage media (e.g., tape or disk) from which they may be easily converted to other media (e.g., semiconductor memory devices ("chips")) and copied; and (iv) eventually transformed into a sequence of electrical signals that instruct a computer so as to produce a desired result. [CR 45, Exs. P-1, P-4] Operating system programs are merely "common programs" used by many users, assisting them in the writing and efficient use of application programs; indeed, they have been described as "special types of applications programs."¹ In performing a data processing task, selected

¹ See, e.g., P. Calingaert, *Operating System Elements* 2 (1982) ("Although the requirements of the various users differ, they typically have common elements, which can be met by providing common programs to facilitate the preparation and use of application programs. These common programs, intended for all the users who share the computer hardware, are called *system programs*") (emphasis in original); L. Frenzel, *Getting Acquainted with Microcomputers* 114 (1978) ("There are many different types of programs associated with systems software. All of these programs are designed to assist the programmer in writing and developing his applications programs." "You might say that systems programs are special types of applications programs").

operating system programs work together with an application program, forming a combined set of instructions. [CR 47 at 411-12]

Thus, it is only by linguistic sleight-of-hand, and a misleading use of jargon (highlighted by elimination of the word "programs" when referring to "operating system programs" and by defining the terms "computer programs" and "software" as referring only to application programs, excluding operating system programs), that the petition avoids the central fact that there is not any meaningful distinction that can be sustained between programs referred to as operating system programs and other kinds of programs. [See 714 F.2d at 1242-45, 1251 (and the authorities cited therein)]²

Nor is the petition correct in attempting (at 6) to differentiate operating system programs as "purely functional and utilitarian" or, in statutory terms [see 17 U.S.C. § 102(b)], as "processes," "systems" or "methods of operation." Operating system programs, the same as application programs, may be — and the works in suit clearly are — original works "expressed in words, numbers or other verbal or numerical signals or indicia" and "used directly or indirectly in a computer in order to bring about a certain

² Appendix "A" is a glossary of pertinent terms presented for the Court's convenient reference.

Appendix "B" reproduces excerpts from each of the fourteen programs which are the subject of this suit (sometimes referred to as "the works in suit"). Three of the programs (Copy, Copy A and Hello [Exs. P-9A, P-10A, P-15A]) were registered as written in source code and eleven were registered in object code. One of the programs registered in object code (Applesoft [Ex. P-6A]) also was registered in source code [CR 47 at 370-71]. Another of the programs registered in object code (Autostart ROM [Ex. P-5A]) also was published in source code as part of a copyrighted book, the *Apple II Manual* [CR 46 at 249, 296].

result," precisely within the statutory definitions of "literary works" and "computer programs" in 17 U.S.C. § 101.³

All of the apposite cases have accordingly granted copyright protection to computer programs as "literary works" without regard to the purported distinction contended for by Franklin.⁴ Indeed, just such a purported dis-

³ See Keplinger, *Computer Software — Its Nature and Its Protection*, 30 Emory L.J. 483, 485 (1981) (footnote omitted):

"A computer program is not an abstraction or an idealized abstract machine; rather, it is a writing which explains in intricate detail the procedure for carrying out a process, idea, or algorithm. Furthermore, a computer program is not a process; it is a work which bears a relationship to the process upon which it is based, analogous to the relationship between a book and its storyline."

The court of appeals' rejection of the "testimony" proffered by Franklin in the form of legal conclusions using statutory terms is found in 714 F.2d at 1250 n.8. *Accord Apple Computer, Inc. v. Formula International, Inc.*, 562 F. Supp. 775, 780 (C.D. Cal. 1983), *appeal pending*.

⁴ *Apple v. Formula*, 562 F. Supp. at 780, 781 (granting preliminary injunction to protect operating system programs identical to five of the works in suit: "There is nothing in any of the statutory terms which suggest a different result for different types of computer programs based upon the function they serve within the machine." "It is crystal-clear that CONTU recommended that *all* computer programs, fixed in any method and performing any function, be included within copyright protection. There likewise can be no doubt but that Congress accepted that recommendation and embodied it in the 1980 amendments to the Copyright law" (emphasis in original)); *Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741, 751-52 (N.D. Ill. 1983) (preliminary injunction granted protecting operating system programs that direct the sequence of a computer's operations); *Hubco Data Products Corp. v. Management Assistance Inc.*, 2 Copyright L. Rep. (CCH) (Copyright L. Dec.) ¶ 25,529, at 18,105 (D. Idaho Feb. 3, 1983) (rejecting argument that an operating system program "cannot be copyrightable because it is a machine process" and granting preliminary injunction to protect operating system program that determines the computer's memory capacity and the amount of peripheral hardware that can be used with the computer); *GCA Corp. v. Chance*, 217 U.S.P.Q. (BNA) 718, 720 (N.D. Cal. Sept. 1, 1982) (preliminary injunction granted protecting "operating programs"); *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F. Supp. 171, 173 (N.D. Cal.

tion was expressly considered and rejected by the majority of the National Commission on New Technological Uses of Copyrighted Works (CONTU) [CONTU Final Report 1, 21 (1979)] whose recommendations were adopted by Congress [see 714 F.2d at 1252]. *See also* CONTU Final Report 21 ("Programs should no more be considered machine parts than videotapes should be considered parts of projectors or phonorecords parts of sound reproduction equipment. . . . That the words of a program are used ultimately in the implementation of a process should in no way affect their copyrightability").

Second, Franklin's statement of the case erroneously suggests (at 5) that copying of Apple's programs was the only way in which Franklin could compete with Apple. That suggestion ignores the fact that others have created operating system programs to run with Apple (and also Franklin) computers without copying Apple's programs. Indeed, the copyrighted operating system programs known as CP/M, written and owned by Digital Research Inc., which can be used with both Apple and Franklin computers and for which thousands of application programs have been written, are regarded by some as the "de facto standard in personal computers." [CR 46, Exs. P-18 at 69-70, P-21 at 5-6; inCider, Mar. 1983, at 25, Tr. of Oral Argument, Mar. 17, 1983, at 30; Business Week, Mar. 8, 1982, at 80]

The suggestion in the petition (at 4-6) that Franklin copied Apple's programs to achieve "compatibility" with "all of the application programs" which have been written by users for use with Apple's computers — apart from the lack of merit in the petition's underlying argument [see Argument pt. I, *infra*] — is equally misleading. Contrary to the suggestion (at 5) that Franklin "studied whether it would be possible to redesign the works in suit" to achieve

1981) (protecting an operating system "computer program which tells the computer how to take the information which is put into the computer by an operator in one computer language and translate that information into a more simplified 'machine' language which the computer can understand" — "obvious[ly] . . . crucial to the operation of the computer").

"compatibility," the record establishes that Franklin did not even try to write its own programs (with one possible exception as to which it succeeded) until after this suit had been brought [CR 46 at 288-89, 293-94] and did not undertake its so-called "study" (which addressed only *one* work in suit) until *after* it began copying [CR 46 at 300 & Ex. P-21 at 21-25]. Moreover, although Franklin admittedly copied *all* the works in suit, Franklin's vice-president admitted that it was "not true" that "all" such works had to be copied to achieve compatibility [CR 46 at 299]. Additionally, although Franklin copied the works in suit in their entirety virtually line-for-line [CR 45, Exs. P-1, P-4; CR 46 at 286-89, 291, 297-98 & Ex. P-21 at 33, 40; CR 47 at 311-12, 376-78], it is not disputed that only very small portions of any of Apple's programs have any bearing on achieving compatibility [CR 46, Ex. P-19 at 93-97]. In all, it was shown that ninety-eight percent of all of the application programs written for use with the works in suit could run without modification with operating system software written, without copying, from scratch [CR 45 at 44; CR 47 at 423-24] — which is as much compatibility as Apple has been able to achieve for its own operating system programs [CR 45 at 44-45; CR 47 at 424-26].⁵

Third, Franklin's statement of the case describes (at 3, 7) the decision of the court of appeals as a "far-reaching" one which received "extraordinary" attention in the press because of "its significance to the computer industry." But the decision was considered significant and was widely reported only because it reversed the aberrational decision of the district court, reassuring the industry that it would not be deprived of the legal protection it required to survive. In essence, the articles reported the "relief [which] swept

⁵ Franklin's chairman conceded that achieving one hundred percent compatibility could not be guaranteed in any event due to hardware (as opposed to software) or other differences between the Franklin ACE 100 and the Apple II. [CR 46, Ex. P-20 at 10-12]

through the industry" when the decision of the court of appeals was announced.⁶

Reasons for Denying the Petition

Summary of Argument

The petition advances (at 8-9) several reasons for issuing the writ. None can withstand scrutiny:

1. The petition's assertion (at 8) that the case "involves the most important legal issues in the field of computer technology" and "is a case of first impression" is misleading. The only remarkable thing about this case was the district court's decision which, in denying Apple's motion for a preliminary injunction to prevent Franklin's "admitted copying" of Apple's copyrighted computer programs [714 F.2d at 1245], created a categorical exemption from the Copyright Act of 1976 and the Software Copyright Act of 1980 for computer programs referred to as "operating system programs." That decision confounded a clear congressional mandate, was irreconcilable with the five (and only) other cases treating with copyrightability of operating system programs and jeopardized the industry which depends on copyright for protection against software piracy. The Third Circuit properly reversed and remanded the case for further proceedings, including consideration of the various defenses asserted but not ruled upon by either court. There is no need or warrant for intervention by this Court in the orderly consideration and disposition of this case in the lower courts.

2. The court of appeals' decision, consistent with the

⁶ N.Y. Times, Oct. 23, 1983, § 3, at 8, also there explaining that "[t]here is a tremendous amount of piracy going on, . . . 'so it was important to the industry that Apple win.'"

A copy of this article (cited by the petition (at 3 n.1)) is reproduced in Appendix "C."

other well-reasoned decisions in point, correctly interpreted and applied the copyright law to permit protection of Apple computer programs, and gave proper recognition to *Baker v. Selden* and its related doctrines (without remotely raising any constitutional question).

3. The court of appeals' decision, in accordance with the decisions rendered in at least nine other circuits (none being to the contrary), properly recognized the appropriateness of a presumption of irreparable harm in copyright cases upon prima facie proof of infringement of a valid copyright and, in any event, also correctly found irreparable harm to be proven in this case.

Argument

I. THE DECISION OF THE COURT OF APPEALS ALLOWING COPYRIGHT PROTECTION FOR APPLE'S COMPUTER PROGRAMS IN ACCORDANCE WITH THE CONGRESSIONAL MANDATE AND THE APPOSITE DECISIONAL LAW DOES NOT CREATE ANY "CONFUSION" OR OTHERWISE PROVIDE ANY OCCASION FOR REVIEW BY THIS COURT.

Petitioner's conception of the "implications" of the decision of the court of appeals [Pet. at 10-12] is far from the mark.

First, the notion that "essential and lucrative elements of high technology will be converted into computer electronic circuitry . . . in order to achieve a longer and broader monopoly through the easier route of copyright [rather than patents]" [Pet. at 10] miscomprehends the nature of copyright protection. The only "monopoly" granted by the copyright law is on the copyright holder's "original work of authorship" and all that the law prevents is copying. "All that copyright protection for programs, videotapes, and phonorecords means is that users may not take the works of others to operate their machines. In each instance, one

is always free to make the machine do the same thing as it would if it had the copyrighted work placed in it, but only by one's own creative effort rather than by piracy." CONTU Final Report 21.⁷

Franklin's contention (at 11) that acknowledging copyright protection for Apple's computer programs will discourage "competition in computer manufacturing" is particularly inverted. As noted above, the record does not support the contention that Franklin or any other manufacturer needs to copy Apple's programs to be able to compete in the marketplace. And, even if it did, that would hardly present a sound argument for negating the congressional grant of copyright. Cf. *SK&F, Co. v. Premo Pharmaceutical Laboratories, Inc.*, 625 F.2d 1055, 1067 (3d Cir. 1980) (although one may be able to "compete more effectively" through misappropriation, that would be no grounds

⁷ The implicit suggestion in the petition that Apple should be relegated to seeking patent protection rather than copyright protection for its computer programs must fail on several counts.

First, as noted by the court of appeals [714 F.2d at 1251]: "Apple does not seek to copyright the method which instructs the computer to perform its operating functions but only the instructions themselves. The method would be protected, if at all, by the patent law, an issue as yet unresolved. See *Diamond v. Diehr*, 450 U.S. 175 . . . (1981)."

Second, that suggestion runs counter to the conclusion of the CONTU majority that patent protection "may inhibit the dissemination of information and restrict competition to a greater extent than copyright" and the explicit majority recommendation that "copyright protection not be withdrawn from programs." CONTU Final Report 16. Franklin's suggestion also, of course, is explicitly or implicitly rejected by all of the cases granting copyright protection to computer programs like those of Apple.

Third, it has been well noted that copyright (and *not* patent) provides the only appropriate protection for computer programs because of the lengthy period required for processing of a patent application and the need for immediate protection of computer programs against copying from the time of first distribution. Note, *Copyright Protection of Computer Program Object Code*, 96 Harv. L. Rev. 1723, 1742 (1983).

for denying a preliminary injunction since such "kinds of business activity, while promoting competition in the short run, are in the long run apt to be destructive of competition"); see also Note, *Copyright Protection of Computer Program Object Code*, 96 Harv. L. Rev. 1723, 1737 n.90 (1983) (a copyright on an operating system program "does not monopolize the internal processes or control functions of a computer; it grants rights only in one particular programmer's expression of how to implement those internal processes").

The petition's companion argument (at 11) that "copyrighting of operating systems will foster the 'balkanization' of software application programs" is similarly lacking support in the record. As noted above, the record indicates that Franklin could have written its own operating system programs, without copying, from scratch, but instead chose to engage in wholesale copying without even attempting to write its own programs [CR 46 at 288-89, 293-94, 300]. Moreover, even if that were not the case, it would be an illogical and untoward rejection of both copyright law and policy to order the forfeit of a copyright on a computer program merely because a number of independent parties wrote other programs to run with the copyrighted program and Franklin therefore desired to take over the copyrighted program for itself. Contrary to the thrust of Franklin's argument, it is such a ruling that would be a setback to technological progress, discouraging the continued writing of creative computer programs.⁸

⁸ See, e.g., amicus curiae briefs [714 F.2d at 1242 n.1] of Microsoft Corporation at 3, 7 (the district court's decision, "if upheld, might well have the effect of crippling . . . the development of computer software"; "[t]he basic form of protection of creative endeavor in computer software relied on by the industry today is copyright"), Association of Data Processing Service Organizations, Inc. at 3 ("[i]f permitted to stand," the district court decision "would effectively leave many program authors without any adequate means of protection" which could "have a substantial adverse impact upon the computer services industry") and Digital Research Inc. at 3 ("[i]f the lower court opinion were to be the law

Finally, there is no basis for the petition's suggestion (at 12) that there is any "present confusion" which needs to be dispelled. To the contrary, the cases are unanimous in disposing of petitioner's arguments in accordance with an extraordinarily clear and enlightened congressional mandate. See *Midway v. Strohon*; *Hubco*; *Apple v. Formula*; *Tandy*; and *GCA*.

II. THE PLAIN LANGUAGE OF THE COPYRIGHT LAWS, THE PERTINENT LEGISLATIVE HISTORY AND THE APPPOSITE DECISIONAL LAW ALL SUPPORT THE DECISION OF THE COURT OF APPEALS.

A. The Statute

The petition contends (at 21) that the court of appeals erred in giving "substantive effect" to the Software Copyright Act of 1980 and in "failing to recognize the predominance of section 102(b)'s limitation on copyrightability." That argument, however, ignores the legislative history of the Act which reflects an entire series of CONTU recommendations that were "accepted by Congress" [714 F.2d at 1252] making it explicit that "computer software" is a proper subject of copyright. See H.R. Rep. No. 1307, 96th Cong., 2d Sess. 23, *reprinted in* 1980 U.S. Code Cong. & Ad. News 6460, 6482.⁹

As has been well noted, in defining a "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about

of this country, it would effectively destroy the entire industry overnight because there would be no incentive for . . . software developers to devote time and money to creating new software").

⁹ It was "unnecessary" to make any amendment to the 1976 Act supplementing the added definition because, it was reasoned, computer programs already qualified as "literary works" under section 102(a) of that Act. CONTU Final Report 16; *accord* H.R. Rep. No. 1476, 94th Cong., 2d Sess. 54, *reprinted in* 1976 U.S. Code Cong. & Ad. News 5659, 5667 ("computer programs" are "literary works").

a certain result" [17 U.S.C. § 101], although informed of the choice, Congress made no distinction (based on the functions performed by a program, on the use to which a program may be put or on any other basis) between operating system programs and application programs. [714 F.2d at 1252; CONTU Final Report 21; *Apple v. Formula*, 562 F. Supp. at 780; see also *Midway v. Strohon*, 564 F. Supp. at 750-52; *Hubco*, 2 Copyright L. Rep. (CCH) ¶ 25,529, at 18,103-05; *Tandy*, 524 F. Supp. at 173; *GCA*, 217 U.S.P.Q. (BNA) at 719-20] Congress unequivocally chose to afford copyright protection to computer programs of every kind — just as it protects other writings of every kind — provided they are, like the works in suit, "original works of authorship fixed in any tangible medium of expression." 17 U.S.C. § 102(a).¹⁰

B. *Baker v. Selden*

The petition asserts (at 12-14) that, while the "court of appeals acknowledged that a 'literal construction' of *Baker* supported Franklin's position that 'purely utilitarian works' cannot be copyrighted," its opinion "disagreed with *Baker*" by refusing to "'accept the expansive reading (of *Baker*) given . . . by some courts'" and thereby "undermines" *Baker v. Selden*, 101 U.S. 99 (1880). That assertion mischaracterizes both what the Third Circuit actually said and the *Baker* holding.

First, the Third Circuit observed only that "a literal construction of ["*dictum* in *Baker v. Selden*"] could support

¹⁰ An "original work of authorship" is merely that which "[o]wes its origin to the author," i.e., is independently created, and not copied from other works. CONTU Final Report 18 (citations omitted); accord *Best Medium Publishing Co. v. National Insider, Inc.*, 385 F.2d 384, 386 (7th Cir. 1967), cert. denied, 390 U.S. 955 (1968). There is no dispute that Apple's works in suit were not copied from anyone else's works. [CR 45, Ex. P-4, para. 12] The petition also does not dispute [see p. 7 n.4] that the works in suit, which appear as writings on paper, diskettes or ROMs [CR 45, Exs. P-5A to P-17A; Appendix "B"], are properly "fixed" in "tangible medi[a] of expression."

Franklin's reading[.]” [714 F.2d at 1252, 1251 (emphasis supplied)]

Second, in any event, the *Baker* dictum would merely allow reproduction of “methods and diagrams used to illustrate [a] book” “on science or the useful arts” where reproduction thereof is “necessary” to “use[]” what the book “teaches.” *Baker*, 101 U.S. at 103. Clearly, the works in suit are not such “diagrams” in a “science” “book” and the Third Circuit thus did not jeopardize *Baker*’s “continued vitality” [Pet. at 12] or override any “constitutional doctrine[]” [*id.* at 13] in declining to apply that inapposite dictum.

The *Baker* case and later cases based on the *Baker* decision support only the irrelevant conclusion that blank, uncompleted forms or charts are not copyrightable.¹¹ They do not conflict with the corollary rule that, “if any information is contained in those blanks, copyright protection is available.” *Sid & Marty Krofft Television Productions, Inc. v. McDonald’s Corp.*, 562 F.2d 1157, 1168 (9th Cir. 1977); accord *Edwin K. Williams & Co. v. Edwin K. Williams & Co.-East*, 542 F.2d 1053, 1060-61 (9th Cir. 1976), *cert. denied*, 433 U.S. 908 (1977). While a blank computer memory storage device (e.g., a blank ROM or diskette [see Appendix “A”], as to which Apple did not seek and the Third Circuit did not afford copyright protection) might be considered the analog of a blank form or chart (or a blank piece of paper), the computer program embodied or written thereon may

¹¹ *Baker*, 101 U.S. at 100 (“forms or blanks, consisting of ruled lines and headings, illustrating [an accounting] system and showing how it is to be used and carried out in practice” noncopyrightable); *Brown Instrument Co. v. Warner*, 161 F.2d 910, 910 (D.C. Cir.) (“blank graph paper ruled according to . . . mechanical characteristics” noncopyrightable), *cert. denied*, 332 U.S. 801 (1947); *Taylor Instrument Cos. v. Fawley-Brost Co.*, 139 F.2d 98 (7th Cir. 1943) (blank circular charts for use with a temperature recording machine noncopyrightable), *cert. denied*, 321 U.S. 785 (1944).

not be. Instead, the works in suit constitute copyrightable "information." [See Appendix "B"]¹²

Third, the "'expansive reading (of *Baker*) given . . . by some courts'" [714 F.2d at 1251 (citing *Taylor Instrument Cos. v. Fawley-Brost Co.*, 139 F.2d 98, 100 (7th Cir. 1943), *cert. denied*, 321 U.S. 785 (1944))] referred to in the Third Circuit opinion is that a necessary predicate of copyrightability is that the work must "teach or convey information." That reading of *Baker* was properly "not accepted" by the court of appeals to deny copyrightability to the works in suit because: (i) even before adoption of the 1976 Act, it was held that all "communication" means for purposes of copyright law is that someone can tell what the work is [see *Harcourt, Brace & World, Inc. v. Graphic Controls Corp.*, 329 F. Supp. 517, 523 (S.D.N.Y. 1971) (answer sheets "convey information" since "they inform a reader that they are designed to be the page upon which one records responses to an examination in a certain way")]; (ii) CONTU rejected that position [CONTU Final Report 21 (copyrightability should not depend on whether or not the program produces any perceptible output)]; and (iii) in any event, operating system programs such as the works in suit (as set forth in Appendix "B") in fact do "convey information" and "communicate with humans" since computers cannot and "do not

¹² Merely because these programs are expressed in 0's and 1's or hexadecimal code that has no meaning except to programmers does not detract from their copyrightability. See 17 U.S.C. § 101 (embracing "works . . . expressed in words, numbers or other verbal or numerical symbols or indicia"). Indeed, the courts have long protected as copyrightable expression codes that are incomprehensible to those unfamiliar with them, and even codes designed to have no meaning at all. *Reiss v. National Quotation Bureau, Inc.*, 276 F. 717, 718, 719 (S.D.N.Y. 1921) (L. Hand, J.) (plaintiff's cable code, comprised of "6,325 coined words of 5 letters each, numbered consecutively from 38,495 to 44,819" which "had no meaning," held copyrightable: "I can see no reason why words should not be [protectible literary works] because they communicate nothing"); accord *Hartfield v. Peterson*, 91 F.2d 998 (2d Cir. 1937) (A. Hand, J.) (cipher code copyrightable).

understand" or use them, while "humans [can and do]" [Brooks, "Interrelationship of Copyright and Trade Secret," *Software Protection: Current Developments in Copyright and Patent and Their Relationship to Trade Secret* 309, 318-19 (1982)].

Finally, the petition (at 13) also mischaracterizes *Baker* as purportedly rendering "purely utilitarian works" noncopyrightable. Whatever *Baker* stood for when decided, "purely utilitarian works" (e.g., phonorecords, videotapes and film) now have been declared copyrightable by statute [17 U.S.C. § 102(a)]. See also H.R. Rep. No. 1476, 94th Cong., 2d Sess. 52, reprinted in 1976 U.S. Code Cong. & Ad. News 5659, 5665 (the 1976 Copyright Act "is intended to avoid the artificial and largely unjustifiable distinctions, derived from cases such as *White-Smith* [(musical composition fixed in piano roll not copyrightable)] under which statutory copyrightability in certain cases has been made to depend upon the form or medium in which the work is fixed" (footnote omitted)).¹³

C. The "Merger Doctrine"

The "expression" of any computer program is the particular written arrangement or sequence of symbols that the programmer chooses to adopt to perform a particular data processing task (just as the particular arrangement or sequence of words or symbols constitutes the "expression" of any literary work). Cf. CONTU Final Report 15 ("a program is created, as are most copyrightable works, by placing

¹³ The petition (at 14-15) also challenges the citation by the court of appeals [714 F.2d at 1252] of *Mazer v. Stein*, 347 U.S. 201, 218 (1954). But the petition fails to note in that regard that the court of appeals cited the *Mazer* case solely to refute Franklin's overblown argument (at 14-15) that "utilitarian use" "precludes copyrightability" [714 F.2d at 1251-52]. Contrary to Franklin's argument, the court of appeals was correct in citing the *Mazer* case against the limitations on copyright law contended for by Franklin. Accord CONTU Final Report 21 ("[t]hat the words of a program are used ultimately in the implementation of a process should in no way affect their copyrightability").

symbols in a medium"). Here, each work in suit consists of a complicated written arrangement of sequenced lines of code or instructions [see Appendix "B"] designed to accomplish a given data processing task in a particular manner [see 714 F.2d at 1244 n.4 (describing the tasks accomplished by each work in suit)]. They represent highly creative endeavors of Apple programmers and were created at great expense. [CR 45, Ex. P-4; 714 F.2d at 1245]

The petition (at 18-19) criticizes the Third Circuit for allegedly failing "to provide guidelines for the application of the [idea/expression] merger doctrine" to operating system programs.¹⁴ But, in fact, the court did state the appropriate guideline in terms "no different than that [applied to] determine whether the expression and idea have merged" in other works and contexts. [714 F.2d at 1253] Adopting the focus in earlier cases "on whether the idea is capable of various modes of expression," the Third Circuit well explained that, "[i]f other programs can be written or created which perform the same function as an Apple's operating system program, then that program is an expression of the idea and hence copyrightable." [*Id.*] Indeed, contrary to the petition's contention (at 19) that the court of appeals engaged in only a "metaphysical analysis," the court provided a concrete illustration of the "merger doctrine" in the context of one of the works in suit (Applesoft, described in 714 F.2d at 1244 n.4, 1251). [*Id.* at 1253]¹⁵ There is no basis

¹⁴ The doctrine enunciates an exception to copyright protection "when there is but a limited number of ways to express a given idea." CONTU Final Report 20. "In the computer context," when a particular sequence of instructions is the "only and essential means of accomplishing a given task," that sequence may be used by others. *Id.*

¹⁵ The opinion of the court of appeals explained [714 F.2d at 1253]:

"The idea of one of the operating system programs is, for example, how to translate source code into object code. If other methods of expressing that idea are not foreclosed as a practical matter, then there is no merger."

whatever for the petition's assertion (at 19) that the standard enunciated in the opinion of the court of appeals will "confuse the lower courts."

III. THE PRESUMPTION OF IRREPARABLE HARM UNDER COPYRIGHT LAW IS UNIFORMLY AND ROUTINELY APPLIED AND NEEDS NO "CLARIFICATION." IN ANY EVENT, THE PETITION IGNORES THAT THE COURT OF APPEALS DETERMINED THAT APPLE HAD ALSO ESTABLISHED ACTUAL IRREPARABLE HARM.

Contrary to the petition's statement (at 23), the court of appeals did not "eliminate" irreparable harm as a prerequisite for the issuance of a preliminary injunction. Rather, the court merely endorsed "the prevailing view that a showing of a prima facie case of copyright infringement or reasonable likelihood of success on the merits raises a presumption of irreparable harm." [714 F.2d at 1254] This presumption is firmly established and has been uniformly applied for years.¹⁶

¹⁶ The following cases illustrate the pervasive acceptance of the presumption (and no circuit appears to be to the contrary):

First Circuit: New Boston Television, Inc. v. Entertainment Sports Programming Network, Inc., 1981-83 Copyright L. Dec. ¶ 25,293 (D. Mass. 1981);

Second Circuit: Wainwright Securities Inc. v. Wall Street Transcript Corp., 558 F.2d 91 (2d Cir. 1977), cert. denied, 434 U.S. 1014 (1978); *Robert Stigwood Group Ltd. v. Sperber*, 457 F.2d 50 (2d Cir. 1972); *Rice v. American Program Bureau*, 446 F.2d 685 (2d Cir. 1971); *Mister B Textiles Inc. v. Woodcrest Fabrics, Inc.*, 523 F. Supp. 21 (S.D.N.Y. 1981); *Encyclopaedia Britannica Educational Corp. v. Crooks*, 447 F. Supp. 243 (W.D.N.Y. 1978);

Third Circuit: Klitzner Industries v. H.K. James & Co., 535 F. Supp. 1249 (E.D. Pa. 1982); *Custom Decor, Inc. v. Nautical Crafts Inc.*, 502 F. Supp. 154 (E.D. Pa. 1980);

Fifth Circuit: Universal City Studios, Inc. v. Kamar Industries, 1981-83 Copyright L. Dec. ¶ 25,452 (S.D. Tex. 1982); *Neal v. Glickman*, 391 F. Supp. 1088 (N.D. Tex. 1975);

In any event, the Third Circuit also based its reversal on the showing of *actual* irreparable harm made by Apple, declaring:

"[E]ven without the presumption of irreparable harm generally applied in copyright infringement cases, the jeopardy to Apple's investment and competitive position caused by Franklin's wholesale copying of many of its key operating programs would satisfy the requirement of irreparable harm needed to support a preliminary injunction."

[714 F.2d at 1254] This alternative ground, unchallenged by the petition, renders it unnecessary to reach any presumption issue, even were there (and there is not) some independent reason to do so.

Sixth Circuit: National Educational Media, Inc. v. Elias Brothers Restaurants, Inc., 207 U.S.P.Q. 884 (E.D. Mich. 1980); *Dealer Advertising Development, Inc. v. Barbara Allan Financial Advertising, Inc.*, 197 U.S.P.Q. 611 (W.D. Mich. 1977);

Seventh Circuit: Atari, Inc. v. North American Philips Consumer Electronics Corp., 672 F.2d 607 (7th Cir. 1982), cert. denied, 103 S. Ct. 176 (1983);

Eighth Circuit: Midway Mfg. Co. v. Dirkschneider, 543 F. Supp. 466 (D. Neb. 1981); *Northwestern Bell Telephone Co. v. Bedco, Inc.*, 501 F. Supp. 299 (D. Minn. 1980);

Ninth Circuit: Universal City Studios, Inc. v. J.A.R. Sales, Inc., 216 U.S.P.Q. 679 (C.D. Cal. 1982); *United Feature Syndicate, Inc. v. Cornwell Industries*, 2 Copyright L. Rep. (CCH) (Copyright L. Dec.) ¶ 25,509 (C.D. Cal. Dec. 9, 1981); *United Feature Syndicate, Inc. v. Powell*, 2 Copyright L. Rep. (CCH) (Copyright L. Dec.) ¶ 25,508 (C.D. Cal. Mar. 27, 1981);

Eleventh Circuit: Original Appalachian Artworks, Inc. v. Cradle Creations, Inc., 1981-83 Copyright L. Dec. ¶ 25,387 (N.D. Ga. 1982); *O'Neill Developments, Inc. v. Galen Kilburn, Inc.*, 524 F. Supp. 710 (N.D. Ga. 1981); *Habersham Plantation Corp. v. Country Concepts*, 209 U.S.P.Q. 711 (N.D. Ga. 1980); *Metro-Goldwyn-Mayer, Inc. v. Showcase Atlanta Cooperative Productions, Inc.*, 479 F. Supp. 351 (N.D. Ga. 1979).

Conclusion

For the foregoing reasons, Franklin's petition for a writ of certiorari should be denied.

November 23, 1983.

Respectfully submitted,

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APPENDICES

APPENDIX "A"

Glossary*

<i>Term</i>	<i>Definition</i>
SOFTWARE (Computer Programs)	Sequenced instructions for the operation of a computer written in a computer language and encoded on various media for transmittal to, and use by, the computer (acting in response to electrical signals).
Operating System Programs	Programs for common data processing functions and routines (including language processor and utility programs).
• Language Processors	Programs which effect the translation of instructions written in higher level code into object code. Such a program is frequently called an ASSEMBLER or COMPILER or an INTERPRETER (which translates one instruction at a time).
• Utilities	Programs for performance of such common data processing tasks as copying data from card to disk media, the loading of programs or the sorting of data.
Application Programs	Programs designed to accomplish a user's specific data processing task (e.g., calculate a payroll).

* See, e.g., P. Calingaert, *Operating System Elements* (1982); L. Frenzel, *Getting Acquainted with Microcomputers* (1978); G. Shelly & T. Cashman, *Introduction to Computers and Data Processing* (1980); Note, *Copyright Protection of Computer Program Object Code*, 96 Harv. L. Rev. 1723 (1983).

<i>Term</i>	<i>Definition</i>
COMPUTER LANGUAGES	Written symbols (code) used for the writing and representation of instructions to a computer.
Source Code	The code in which a program is originally written, usually (for the sake of convenience) a higher level language or assembly language.
• Higher Level Language	Code in which a single statement (e.g., "WRITE") represents an entire series of instructions to the computer. (Some commonly used higher level languages are BASIC, FORTRAN and COBOL).
• Assembly Language	Code with alphanumeric symbols (letters and numbers) in which the statements (e.g., "LSR") represent in symbolic form the instruction set of a computer (the instructions which the computer is capable of executing).
Object Code	Code written in binary (strings of 0's or 1's) or hexadecimal (numbers with some letters) language representing the on/off signals used by the computer to produce the desired data processing result.
MEDIA	The media on which programs are encoded for transmittal to, and use by, computers, including paper tapes; punched cards; magnetic tape; disks or diskettes (floppy disks); and silicon chips (semiconductor memories), including ROMs (read-only-memories), PROMs (programmable-read-only-memories) and RAMs (read-write or random-access-memories).

APPENDIX "B"

Autostart ROM

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1977, 1979

FB00 FFFF

```

FB00 4A 0B 20 47 FB 2B A9 0F
FB0B 90 02 69 E0 B5 2E B1 26
FB10 45 30 25 2E 51 26 91 26
FB1B 60 20 00 FB C4 2C B0 11
FB20 CB 20 0E FB 90 F6 69 01
FB2B 4B 20 00 FB 6B C5 2D 90
FB30 F5 60 A0 2F DC 02 A0 27
FB3B B4 2D A0 27 A9 00 B5 30
FB40 20 2B FB BB 10 F6 60 4B
FB4B 44 2F 03 09 04 B5 27 6B
FB50 29 1B 90 C2 69 7F B5 26
FB5B 04 04 05 26 B5 26 60 A5
FB60 30 1B 69 C3 29 0F B5 30
FB6B 04 04 04 04 05 30 B5 30
FB70 60 4A 0B 20 47 FB B1 26
FB7B 2B 90 04 4A 4A 4A 4A 2F
FB80 0F 60 A6 3A A4 3E 20 96
FB8B FC 2D 4B F9 A1 3A AB 4A
FB90 90 09 6A DC 10 C9 A2 FC
FB9B 00 2F B7 4A AA BC 62 FF
FBA0 20 7F FB DC 04 AC B0 A9
FBAB 00 4A BC A6 F9 B5 2E 29
FBB0 C3 B5 2F 9B 2F BF AA 9B
FBBB AC C3 EC BA FC CB 4A 91
FBC0 0B 4A 4A C9 20 B5 DC FA
FBCB CB B9 DC F2 60 FF FF FF
FBCC 20 B1 FB 4B B1 3A 20 DA
FBDB FC AC C1 2F 7F FB C4 2F
FBEC CB 57 00 00 00 00 04 9C
FBFF 00 00 00 00 00 00 00 00
  
```

Omitted

Omitted

```

FAE- 00 41 EB 00 00 00 00 00
FFB0 CB 49 BC C9 0A 90 D3 69
FFBB BB C9 FA BC CD 60 A9 FE
FFC0 4B B5 E3 FF 4B A5 31 AC
FFCB 00 B4 31 60 BC B2 BE B2
FFD0 EF C4 B2 A9 BB A6 A4 06
FFDB 95 07 C2 C5 FC 00 EB 93
FFEC A7 C6 99 B2 C9 BE C1 35
FFFB BC C4 96 AF 17 17 2B 1F
FFFC B3 7F 5C CC B5 FC 17 17
FFFF F5 03 FB C3 62 FA 40 FA
  
```

From CR 45, Exhibit P-5A

Applesoft (and Floating Point BASIC) (Excerpt from the Program)

Copyright Apple Computer, Inc. 1978

•
JCALL-151

•E0C0 F7FF

E000	4C	2B	F1	4C	3C	D4	00	20
E008-	B1	00	90	05	20	7D	E0	90
E010-	0B	AA	20	B1	00	90	FB	20
E018-	7D	E0	B0	F6	C9	24	D0	06
E020-	A9	FF	B5	11	D0	10	C9	25
E028-	D0	13	A5	14	30	C6	A9	80
E030-	B5	12	05	B1	B5	B1	BA	09
E038-	B0	AA	20	31	00	B6	B2	38
E040	05	14	E9	2B	D0	03	4C	1E
E048-	E1	24	14	30	02	70	F7	A9
E050-	00	B5	14	A5	69	A6	6A	A0
E058-	00	B6	9C	B5	9B	E4	6C	D0
E060-	04	C5	6B	F0	22	A5	B1	D1
E068-	93	D0	0B	A5	B2	C8	D1	9B
E070-	F0	6C	B8	1B	A5	9B	69	07
E078-	90	E1	EB	D0	DC	C9	41	90
E080-	05	E9	5B	3B	E9	A5	60	6B
E088-	4B	C9	D7	D0	0F	BA	3D	02
E090-	01	C9	DE	D0	07	A9	9A	A0
E098-	E0	60	00	00	A5	6B	A4	6C
E0A0-	B5	00	00	00	A5	6D	A4	6C

Omitted

Omitted

F7C8-	3F	A0	00	B5	00	51	B5	
F7D0-	A5	94	B5	3C	A5	95	B5	3D
F7D8-	60	A9	40	B5	14	20	E3	DF
F7E0-	A9	00	B5	14	4C	F0	D8	20
F7E8-	FB	E6	CA	BA	C9	2B	90	0A
F7F0-	E9	2B	4B	20	FB	DA	6B	4C
F7FB-	EC	F7	B5	24	60	CB	D2	D7

From CR 45, Exhibit P-6A

DOS 3.3

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1980

*
 3FF0- AE 9B 33 94 20 16 23 L-
 *1B00 3FFF

1B00- 4C B4 1D A9 DF B5 41 A2
 1B0B- 00 B6 40 40 00 A1 40 E5
 10- 26 9B 45 2C B5 26 9B 11
 1B1B- 40 B1 40 C5 26 D0 05 C5
 1B20- D0 EF F0 04 C6 41 D0 E3
 1B2B- A5 41 29 DF B5 45 B6 42
 1B30- A1 42 4B B5 26 9B 45 2C
 1B3B- B5 26 9B 41 40 B1 42 C5
 1B40- 26 D0 09 C5 D0 EF A4 42
 1B4B- 6B 4C 51 1B 6B B1 42 A4
 1B50- 41 CB BC 79 1C 3B 9B E3
 1B5B- 7A 1C 3D 7B 1C 3B ED 7C
 1B60- 1C F0 9D BD 7D 1C AD 7C
 1B6B- 1C BD 0D 1D A9 1D BD 4C
 1B70- 37 A9 B4 BD 4B 37 A2 0C
 1B7B- B6 40 BD 25 1C AB BD 24
 1B80- 1C B5 41 4C 93 1B 1B B1
 1B8B- 40 6D 7B 1C 91 40 CB D0
 1B90- 02 E6 41 C5 D0 02 E6 41
 1B9B- A5 41 C5 1C 90 E3 41
 1BA0- 02 E6 41 C5 1C 90 E3 41

Omitted

Omitted

3F0B- 0E 0C 01 01 02 0F
 3F0B- 20 93 F0 AD B1 C0 AD B1
 3F0B- C0 A9 00 BD 00 E0 4C 44
 3F0B- 37 00 00 00 BD 63 2A BD
 3F0B- 70 2A BD 71 2A 60 20 5B
 3F0B- 27 BC B7 2A 60 20 7E 2E
 3F0B- AE 9B 33 9A 20 16 23 BA
 3F0B- BE 9B 33 A9 09 4C B5 33

Master Create

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1979

+200. EFF

```

0800- A9 CC 20 05 09 20 23 09
0808- A9 C0 20 E3 08 20 B9 09
0810- 90 1B A9 08 20 05 09 AD
0818- 00 1C 09 4C F0 0F 4C 46
0820- 08 EA EA EA EA A9 07 20
0828- E3 08 4C B5 08 AD 06 1E
0830- 4D 0D 1E 49 6E D0 0F AD
0838- BE 34 49 04 D0 08 BD 66
0840- 2B BD EB 13 F0 08 A9 08
0848- 20 E3 08 4C B5 08 A9 0A
0850- 20 05 09 A9 01 20 E3 08
0858- 20 6A FD 20 4B 09 B0 EE
0860- 40 1D B9 31 0E 99 75 2B
0868- BB 10 F7 A9 02 20 05 09
0870- A9 02 20 E3 08 20 0D 09
0878- A9 03 20 E3 08 20 39 09
0880- D0 C0 20 B5 09 90 4A A9
0888- 04 20 05 09 AD 71 0E 0A
0890- D0 03 0A 90 04 A9 09 D0
0898- 08 A9 0A 20 E3 08 A9 05
0900- 20 E3 08 20 39 09 20 08
0908- A9 0A 20 09 4C 6B 20

```

Omitted

Omitted

```

0908- FF FF FF FF FF FF FF FF
0910- FF FF FF FF FF FF FF FF
0918- FF FF FF FF FF FF FF FF
0920- FF FF FF FF FF FF FF FF
0928- FF FF FF FF FF FF FF FF
0930- FF FF FF FF FF FF FF FF
0938- FF FF FF FF FF FF FF FF
0940- FF FF FF FF FF FF FF FF

```

Copy (Excerpt from the Program)

Copyright Apple Computer, Inc. 1980

2

LIST

```

10 TEXT
20 REM *****
30 REM *          DISK COPY          *
40 REM *    COPYRIGHT 1980 BY      *
50 REM *    APPLE COMPUTER INC.    *
60 REM *                               *
70 REM *****
80 PRINT "LOAD COPY OBJO": REM AS2
   CO
100 DIM DK$(20)
110 DIM I$(40): CALL -936: PRINT
   "  APPLE DISKETTE DUPLICATION P
   ROGRAM": PRINT PRINT
120 CALL 704 CS= PEEK (718)/16
130 POKE 715: PEEK (205)+1: REM BUFS
   TART
140 POKE 716: PEEK (203)-1: REM BUFE
   ND
150 I$=" ORIGINAL" N=CS A=718 GOSUB
   430 ME=N N= PEEK (720): GOSUB
   440 MD=N
160 "
   N=77
   Omitted
   Omitted
480 IF MS485 THEN RETURN
490 IF MD480 THEN RETURN
500 CALL -936: IF DK$(1,1)="E" THEN
   PRINT
510 PRINT "INSERT ", DK$, " DISK AND P
   RESS RETURN": INPUT DK$
520 CALL -936
530 RETURN

```

Copy A

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1980

LIST

```

0 TEXT
10 REM *****
20 REM *          DISK COPY          *
30 REM *    COPYRIGHT 1980 BY    *
40 REM *  APPLE COMPUTER INC  *
50 REM *
60 REM *****
70 PRINT "LOAD COPY DEJO": REM
   A$200
80 HOME PRINT "  APPLE DISKET
   TE DUPLICATION PROGRAM": PRINT
   : PRINT
90 CALL 704 CS = PEEK (718) / 1
   6
100 POKE 715, PEEK (110) + 1: REM
   DUFSTART
110 POKE 716, PEEK (112) - 1: REM
   DUFEND
120 IS = " ORIGIN " N = CS A = 7
   12 = MS = A
Omitted
Omitted
MULT = ", PEEK (41)
+ 256 + PEEK (40) + 14), 96
RETURN
360 IF MS < 0 SS THEN RETURN
370 IF MD < 0 SD THEN RETURN
375 HOME : IF LEFT$ (DK$, 1) = "
   D" THEN PRINT
380 PRINT "INSERT ", DK$, " DISK A
   ND PRESS RETURN": INPUT " "
   : DK$
385 CALL - 935
390 RETURN

```

From CR 45, Exhibit P-10A

Copy OBJO

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1980

+200 90B

```

0800 - 4C D7 02 4C F7 02 4C 17
0802 - 03 D0 CB B9 A0 B0 A2 D3
0810 - C9 B1 A0 A5 C4 02 01 20
0818 - A3 03 A2 01 A9 FF 9D D1
0820 - 02 9D D3 02 CA 10 F7 A0
0828 - 01 B1 3C 8D CE 02 C8 B1
0830 - 3C 8D D0 02 4C 34 03 20
0838 - A3 03 A2 01 BD D1 02 30
0840 - 03 C9 23 90 04 A9 01 D0
0848 - 28 20 28 03 B0 13 A0 CE
0850 - 3C 8D CA 02 90 0E 20
0858 - A3 03 A2 00 20 38 03 90
0860 - 04 A9 02 D0 00 DD CD 02
0868 - B5 0F BD CF 02 B5 10 A9
0870 - 00 8D C9 02 20 BC 03 60
0878 - B5 06 03 AC CB 02 B8 80
0880 - 04 03 28 00 A0 03 91 30
0888 - B5 04 03 10 CA 03 CD 00
0890 - 02 70 28 B3 B3 02 10 11
0898 - 02 01 02 20 11 02 C9 23
0900 - 00 00 00 00 00 0F 9D D3

```

Omitted

Omitted

```

0908 - 00 00 00 00 00 00 00 00
0910 - 00 00 00 00 00 00 00 00
0918 - 00 00 00 00 00 00 00 00
0920 - 00 00 00 00 00 00 00 00
0928 - 00 00 00 00 00 00 00 00
0930 - 00 00 00 00 00 00 00 00
0938 - 00 00 00 00 00 00 00 00
0940 - 00 00 00 00 00 00 00 00
0948 - 00 00 00 00 00 00 00 00
0950 - 00 00 00 00 00 00 00 00
0958 - 00 00 00 00 00 00 00 00
0960 - 00 00 00 00 00 00 00 00
0968 - 00 00 00 00 00 00 00 00
0970 - 00 00 00 00 00 00 00 00
0978 - 00 00 00 00 00 00 00 00
0980 - 00 00 00 00 00 00 00 00
0988 - 00 00 00 00 00 00 00 00
0990 - 00 00 00 00 00 00 00 00
0998 - 00 00 00 00 00 00 00 00

```

Apple Integer BASIC (Excerpt from the Program)

Copyright Apple Computer, Inc. 1977

CODE			
D000-	A9 20	LDA	#S20
D002-	8D 26 03	STA	\$0326
D005-	AD 57 C0	LDA	\$C057
D008-	AD 53 C0	LDA	\$C053
D00B-	AD 50 C0	LDA	\$C050
D00E-	A9 00	LDA	#S00
D010-	85 1C	STA	\$1C
D012-	AD 26 03	LDA	\$0326
D015-	85 1B	STA	\$1B
D017-	A0 00	LDY	#S00
D019-	84 1A	STY	\$1A
D01B-	A5 1C	LDA	\$1C
D01D-	91 1A	STA	(\$1A), Y
D01F-	20 A2 D0	JSR	\$D0A2
D022-	CB	INY	
D023-	D0 F6	BNE	\$D01B
D025-	E6 1B	INC	\$1B
D027-	A5 1B	LDA	\$1B
D029-	29 1F	AND	#\$1F
D02B-	D0 EE	BNE	\$D01B
D02D-	60	RTS	
D02E-	8D 22 03	STA	\$0322
D031-	8E 20 03	STX	\$0320
D034-	8C 21 03	STY	\$0321
D037-	4B	PHA	
D03B-		AND	#\$C0
	Omitted		
F7F7-	85 1E		\$1E
F7F9-	60	RTS	
F7FA-	4C C7 F6	JMP	\$F6C7
			Omitted

DATA:

F7FD: F6 FF FF v

From CR 45, Exhibit P-12A

Boot 13

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1979

A800 10F0

```

0810- 20 E3 03 84 00 B5 01 A0
0813- 01 B1 00 8D 90 17 C8 B1
0816- 00 BD 91 17 20 58 FC A0
0819- FF C8 B9 96 17 08 09 B0
0820- 20 ED FD 28 10 F3 A9 BF
0823- B5 33 20 6A FD AD 00 02
0826- C4 BD F0 CF C9 B1 90 DC
0829- C9 B8 20 D3 0A 0A 0A 0A
0832- BD B2 17 A9 17 A0 B1 20
0835- 00 1D B0 F7 AD FE 16 BD
0838- BA 17 B5 13 E6 13 AD FF
0841- 16 4A 4A 4A B5 10 A9 17
0844- A0 B1 20 00 1D D0 F7 EE
0847- BA 17 EE B6 17 AD B6 17
0850- C5 10 F0 EA 90 EB AD B2
0853- 17 AA A9 00 B5 12 6C 12
0856- 00 01 60 01 00 00 00 92
0859- 17 00 16 00 00 01 00 00
0862- C6 FD 00 01 EF D8 CD CD
0865- 20 20 20 00 20 20 20
0868- 20 20 20 00 20 20 20

```

Omitted

Omitted

```

1000- 39 1E 40 00 4B 4A 05
1003- 4A 9D BD 00 BD 3C 00 68
1006- 01 00 09 1A BA 4B 6B EA
1009- 9D BD 00 BD 3C 00 60 00
1012- 00 00 00 00 00 00 00 00
1015- 00 00 00 00 00 00 00 00
1018- 00 00 00 00 00 00 00 00
1021- 4B

```

Copyright Apple Computer, Inc. 1978

Omitted

Omitted

Hello

(Excerpt from the Program)

Copyright Apple Computer, Inc. 1980

LIST

```

10 REM  -- DOS 3.3 HELLO
20 REM
30 TEXT  PRINT
40 HOME
50 PRINT "DOS VERSION 3.3
   .    08/25/80"
60 PRINT : PRINT "APPLE II PLUS
   OR ROMCARD  SYSTEM MASTER"
70 REM
80 REM  --POKE LANGUAGE CARD FIN
   DER
90 POKE 768,0: POKE 769,173: POKE
   770,0: POKE 771,224: POKE 77
   2,72: POKE 773,173: POKE 774
   ,129: POKE 775,192: POKE 776
   ,104
95 POKE 777,72: POKE 778,205: POKE
   779,0: POKE 780,224: POKE 78
   1,208: POKE 782,35: POKE 783
   ,173: POKE 784,131: POKE 785
   ,104
Omitted
Omitted
260 REM  --NO C  CAN'T RELOA
   D
270 REM
280 IF PEEK (768) = 0 THEN END
290 PRINT : PRINT "  LANGUAGE C
   ARD CANNOT BE RELOADED" PRINT
   "  UNTIL THE SYSTEM IS REBO
   OTED . ."
300 END

```

Apple 13-Sector Boot ROM (Excerpt from the Program)

Copyright Apple Computer, Inc. 1978

```

C600- A2 20 A0 C0 A9 03 85 3C
C608- 18 E8 9B 24 3C F0 F5 26
C610- 3C 90 FB C0 D5 F0 ED CA
C618- BA 97 00 08 D0 E6 20 58
C620- FF DA BD 00 01 48 0A 0A
C628- 0A 0A 85 23 AA A9 D0 48
C630- DD EE C0 BD 8C C0 DD BA
C638- C0 3D B9 C0 A0 50 BD 80
C640- C0 9B 29 03 0A 05 2D AA
C648- 3D B1 C0 A9 56 20 A8 FC
C650- 6B 10 EB A9 03 85 27 A9
C658- C0 65 26 85 3D 18 08 BD
C660- 8C C0 10 FB 49 D5 D0 F7
C668- 3D 8C C0 10 FB C9 AA D0
C670- F3 EA BD 8C C0 10 FB C9
C678- 35 F0 09 2B 90 DF 49 AD
C680- F0 1F D0 D9 A0 03 84 2A
C688- 3D 8C C0 10 FB 2A 85 3C
C690- DD 8C C0 10 FB 25 3C 88
C698- 7  D D0 8F

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Omitted

Omitted

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C6A0- 3C 91 26 59 00 08 D0 8D
C6A8- C0 10 FB 59 00 08 D0 8D
C6B0- 60 AB A2 C0 39 00 08 4A
C6B8- 3E C0 C0 4A 3E 97 03 85
C6C0- 3C B1 26 0A 0A 0A 05 3C
C6C8- 91 26 08 EB E0 33 D0 E4
C6D0- C6 2A D0 3E C0 0C 03 D0
C6D8- C3 4C 01 03 4C 2D FF FF

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Apple 16-Sector Boot ROM (Excerpt from the Program)

Copyright Apple Computer, Inc. 1979

*C6C0, C6FF

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C600- A2 20 A0 00 A2 03 B6 3C
C608- 8A 0A 24 3C F0 10 05 3C
C610- 49 FF 29 7E D0 0B 4A D0
C618- F3 98 9D 56 03 CB EB 10
C620- E5 20 58 FF DA BD 00 01
C628- 0A 0A 0A 0A 85 2B AA BD
C630- BE C0 BD 8C C0 BD 8A C0
C638- 3D 89 C0 A0 50 BD 80 C0
C640- 98 29 03 0A 05 2D AA BD
C648- B1 C0 A9 56 20 A8 FC 88
C650- 10 EB 85 26 B5 3D B5 41
C658- A9 0B 85 27 1B 0B BD 8C
C660- C0 10 FB 49 D5 D0 F7 BD
C668- BC C0 10 FB C9 AA D0 F3
C670- EA BD 8C C0 10 FB C9 96
C678- F0 09 2B 90 DF 49 AD F0
C680- 25 D0 D9 A0 03 B5 40 BD
C688- 8C C0 10 FB 2A B5 3C BD
C690- 8C C0 10 FB 2A B5 3C BD
C698- 8C C0 10 FB 2A B5 3C BD

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Omitted

Omitted

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C6A0- FB 59 D6 00 8C C0 10 F3
C6B8- C3 D0 EF 00 8C C0 10 F3
C6D0- 59 D6 02 D0 27 A0 C0 A2
C6DB- 55 CA 30 F3 B1 26 5E 00
C6EC- 03 2A 5E 00 03 2A 91 25
C6E8- C8 D0 EE E6 27 E6 3D A5
C6F0- 3D CD 00 CB A6 2B 90 D3
C6FB- 4C 01 CB 00 00 00 00 00

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The Gavel Comes Down on Computer Copycats



Tom Brown

New rulings thrill the 'piracy' foes. But has copyright law been blurred?

By DAVID E. SANGER

WHEN Apple Computer won a major software copyright suit several weeks ago against a manufacturer of Apple-look-alike computers, relief swept through the industry.

"There is a tremendous amount of piracy going on," said Nicholas Franken, a patent attorney for Beyerly Inc., "so it was important to the industry that Apple win."

If achieving a clear victory was important to industry pioneers, however, avoiding another court defeat was crucial. Had the decision gone the other way, "the result would have been chaos," said Jack Brown, a

Software's Day in Court

Below is a summary of recent major court rulings that affect the copyright protections of personal computer software.

Apple v. Franklin

In perhaps the most significant computer copyright decision yet, the Third Circuit court of appeals ruled that operating systems—the programs that control the flow of information through a computer—can be copyrighted. The court also said that even programs imbedded in a computer's hardware, etched on a silicon chip, can be protected by copyright. Franklin, which makes a machine very similar to the Apple II, is appealing the decision to the Supreme Court.

Artic v. Midway

The Supreme Court refused to hear Artic International's arguments that the "audiovisual works"—the images and sounds—of an electronic video game may not be copyrighted. That left standing a circuit court ruling that both the audiovisual works and the computer chips that generate them are copyrightable. The case grew out of a suit filed by Midway Manufacturing, which owns the copyright on Pac-Man, to stop Artic from distributing a kit that speeds up the play of the game.

Nat'l Conference of Bar Examiners v. Multistate Legal Studies

The Supreme Court refused to hear an appeal from a last preparation service challenging Copyright Office rules that deny the public access to some copyrighted works. While computer and software manufacturers were not directly involved, they are fearful that competitors may be able to use Copyright Office records to reproduce proprietary programs. Critics say that copyrights were designed to aid in the dissemination of information, and the office should not be used to aid companies in maintaining trade secrets.

leading expert on computer law who represented Apple in the case.

In fact, Apple's victory over the Franklin Computer Corporation in the United States Court of Appeals for the Third Circuit in Philadelphia came at a time when the industry was awash in doubts over whether the nation's legal system protects the technology that sparked the personal computer revolution.

But a small flurry of decisions in the past few months has laid many of those worries to rest. At a pace that has surprised even the most optimistic in the industry, several Federal courts have displayed a willingness to push the frontiers of copyright law well beyond traditional boundaries. In copyright battles over the innards of an Apple and the maze-like paths of a Pac-Man machine, they have ruled that all computer programs — even those that are embedded in a computer's circuitry — are "literary works" worthy of copyright protection.

At stake, both for computer giants like the International Business Machines Corporation and weekend "hackers" trying to tap out the Great American Computer Program in their basements, are billions of dollars in sales and millions in licensing rights.

Already, computer "piracy" is a major problem. Thousands of inexpensive "knockoffs" of popular personal computers and crucial computer chips, most Asian-made, flood into the country each month. At home, groups of computer enthusiasts and professional "pirates" freely trade in illegal copies of programs. And technical solutions have failed: No one has found an efficient way to allow amateur computer users to make legitimate back-up copies for their own use while effectively fighting the "pirates."

Manufacturers have only the courts to turn to, and for a time many feared that technology had raced ahead of the law's ability to protect it. But in light of the recent spate of rulings, many companies now believe they have the legal tools they need to drive

"pirates" off the shelves.

"There is no question that these cases constitute a trend," said Gerry J. Elman, an attorney and computer law expert. "We are ending up with the economically desirable result: The people who invest in developing new technology can reap the benefits of it. Whether we are doing it at the expense of creating good law is still an open question."

Indeed, some legal scholars say that many of the court decisions are doing substantial damage to the traditional distinctions between patents, which give inventors a limited-term monopoly on "utilitarian articles" and "novel inventions," and copyrights, which protect the expression of an idea.

FOR example, while a few scholars and attorneys express sympathy for Franklin Computer, which markets a machine that is a dead ringer for the Apple IIe personal computer, they say that Franklin is correct in contending that copyrights are being used by manufacturers in an effort to establish monopolies on the sale of their equipment.

And there is increased concern that manufacturers are trying to copyright their most lucrative programs by "publishing" them in a technical sense, while still keeping the text of those programs secret. "We should not transform the copyright office into a trade secret registry," said Ralph S. Brown, a professor emeritus at the Yale Law School.

What prompted all this debate has been the technological innovation that has eroded many of the traditional distinctions between computer hardware and the computer programs that instruct the machines what to do.

At one time, the difference seemed simple. The computer — including the chips within it — was a machine, eligible for patent protection if it passed muster as sufficiently "novel." And a program was a written work much like a book, eligible for immediate copyright protection

as the expression of an idea or a set of instructions.

But things quickly got complicated. Obtaining a patent can take three to five years, often longer than the useful life of a generation of computer chips, so "the patent system simply could not keep up with the pace of this industry," Professor Brown said.

And it was not immediately clear that the design of chips, or some special types of programs, could be copyrighted, either. Many programs for personal computers are stored inside the machine, on chips known as ROM's, or "read only memory" chips, because the machine "reads" information from them. The program is literally engraved onto the chip's silicon surface. For the courts, this raised another question: At what point does the program become part of the machine itself, making it a "utilitarian object" that must be patented, not copyrighted?

Further confusing the issues, many of those programs are "operating systems," which give the computer instructions about how it manipulates information — where to route it and what to do with it. Is a program that can be "read" only by a machine also part of the hardware, ineligible for copyright protection?

Thus the issue for the courts was fairly basic: If a program can be copyrighted in its raw form, written on paper, can it be copyrighted when it has been merged with the hardware?

FOR a while the answer seemed to be no. When Apple first went to court in an effort to get Franklin's look-alike computer off the shelves, Federal District Judge Clarence C. Newcomer refused to go along. Agreeing with Franklin's attorneys, he said that operating systems are not a "language of description" because they are understandable primarily to machines, not people, and therefore are not eligible for copyright. Moreover, he ruled that software embedded in Apple's computer chips were an "essential element of the machine." He denied the

injunction.

In less than a year, however, that thinking has been almost completely reversed. The Court of Appeals for the Third Circuit, in its decision in the Apple case in August, ruled that literary works "are not confined to literature in the nature of Hemingway's 'For Whom the Bell Tolls.'" And it makes no difference, the court said, whether the programs are burned into the microchips, inseparable from the computer's circuitry.

The decision was applauded by major manufacturers, who thought that without the ruling they would be undersold by machines that were copies of their own designs. "It makes sense that we are protecting the information, regardless of how it is stored," said Joseph B. Taphorn, a patent attorney for the I.B.M. "The Ten Commandments shouldn't be any less protected just because they were engraved on stone."

But the decision also should benefit individuals seeking to market their own programs. While the marketing of software has shifted quickly from a cottage industry to a corporate one, the actual writing of programs is still largely an individual effort. Even some of the most successful companies depend on a single product.

"For the small software companies, where much of the innovation is still taking place, protecting that one program is absolutely essential," insisted Mr. Brown, Apple's lawyer. "Without protection, they are nowhere."

Even with the recent legal victories, however, protecting a copyright takes vigorous work. Consider the case of the Bally Manufacturing Corporation, which holds rights to Pac-Man, Ms. Pac-Man, Space Invaders and Galaxion, some of the most popular games in the country. Over the past two years, according to Glenn Seidenfeld Jr., the company's general counsel, Bally has brought 65 suits against competitors selling almost exact replicas of its arcade games.

In most cases the company has prevailed, largely because the audiovis-

ual effects shown on the screen of a video game can be copyrighted, regardless of the underlying computer design. But in a case that reinforced the basic precepts of the Apple-Franklin decision, the Supreme Court said earlier this month that it would not review a circuit court ruling against Artic International Inc., which lost a suit against a Bally subsidiary. The circuit court had ruled that both the audiovisual effects and the computer chips that generate them are covered by copyright.

ARTIC, which lost at least two other major suits for similar infringements, has since gone out of business. Richard G. Kinney, a Chicago attorney who represented the company, said recently he believes that "it was the suits that drove them under," and that the courts have not fully considered the implications of their ruling.

"This is effectively providing an industrial copyright for all machines, and copyright is singularly inappropriate for protecting utilitarian objects," he said. "The life of a copyright is very long — much longer than a patent — and it effectively means that the companies have a long, long monopoly on these machines."

Bally and other video game manufacturers, along with their computer industry counterparts, deny that they are using the copyright rulings in an effort to stamp out makers of peripheral equipment compatible with theirs. In fact, I.B.M. has gone to some lengths to publish the technical details of its Personal Computer — although not the ROM chip that guides many of its crucial operations — so that outsiders would invest the time needed to create a whole library of software for the machine.

But some say amendments to the copyright and patent system should be enacted by Congress. "I think the answer is a limited-term protection for software that can be issued very quickly, but after some review," said Professor Brown of Yale. "Something between a copyright and a patent."

Until then, most experts expect further challenges to the concept of copyrighting software and computer chips. Some will arise from genuine disagreements over the purpose of the law, they suggest, and others will be attempts to exploit the technological achievements of others.

"The next great question will be, 'What is infringement?'" speculated Mr. Brown, Apple's lawyer. "People are going to try to rewrite programs a little bit, and then say, 'Look at this code; it really is quite different.' In reality, those will be surface changes of the most meaningless sort." ■

Certificate of Service

The undersigned counsel of record for Respondent certifies that he is a member of the Bar of this Court and that, on November 22, 1983, three copies of Brief for Respondent in Opposition to Petition for a Writ of Certiorari to the United States Court of Appeals for the Third Circuit were served upon counsel for Petitioner by Express Mail, postage prepaid in Phoenix, Arizona, addressed as follows:

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Schnader, Harrison, Segal & Lewis
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/s/ Jack E. Brown